Rincon Antonio, Mex. 25 June '05.

Swampy ground along R.R. tracks north of station. It had been oiled but cattle foot-prints were protected by surrounding rim of soil and contained many larvae.

280a, 280b, 280c - put. 26 June a.m. exp. 28 June a.m.

Rincon Antonio, Mex. 25 June 05.

Ditch just beyond swamp (see *280) had been oiled but wind blew film of oil aside. Contained larvae — long-tubed form.

281 ♀ - pup. 30 June, a.m. — ex p. 2 July, a.m.

*281.1 28 June '05

Larvae, apparently same as the above, from large cistern at hospital containing about a foot of very clear water.

281.1 ♀ pup. 3 July

Rincon Antonio, Mex. ~~282~~ .25 June '05.

Large mud puddle in old indian village to northward, contained numerous larvae of jamaicensis (?) and tadpoles.

When the water was examined a couple of days later some very small larvae were also discovered.

282a - 282e - pupae 26 June p.m.
282f - 282i - " 27 " a.m.
282j - ——— " " " p.m. - ex p. 28 June p.m.

282e - ex p. 27 June, a.m.
282a, 282i " " 28 " " "
282b " " " " " "

Rincon Antonio, Mex. 26 June '05.

Tin can containing earth and a few inches of water on top ~~———~~ in lane between indian huts - had been used as plant-pot - contained larvae and pupae. Contained two species — pipiens? and the common short-tubed form.

283a = pupt. 27 June a.m. - ♀ ♂. 28 June p.m.

Tehuantepec. 29 June 05.

Larvae from ditches of very foul water, along R.R. tracks near station. They were very abundant in one shallow portion and all were about full-grown. The next morning all had pupated and no isolations were made. All are evidently one species, the same jamaicensis form found at Rincon Antonio. When at the surface the body hangs nearly perpendicular.

First imago emerged July 1, a.m. and all had emerged July 2, a.m.

One larva 286a — pupated 2 July — died in pupa.

Tehuantepec, 30 June 05.

Larvae from road side mud puddles — water very muddy. In some of these puddles the larvae are swarming, in others there are few or none at all. No other species has been encountered — these all the same as 286. 1 July. The same species occurs in all directions in the mud-puddles. Today most of them are in pupa. The puddles are rapidly drying up. The last rain occurred the night of 28 June.

287 a — k — pup. 30 June p.m.
287 f, i, j. — died.
287 l - 287 m - pup. 1 July. a.m.
287 b, c, e, k. — ex p. 1 July p.m.
287 n, o, — pup. " " " "
287 d - 287 o ex " 2 " noon.

Aedes knabi Coq.



Tehuantepec. 1 July 1905.

Larvae and pupae from water in a hollow place between the main branches of a mango-tree in a cocoa-nut grove on the way to the station. A couple of the pupae are very large. The larvae are numerous and of several species

291a – 291f. – captured pupae.
291g ex p. 2 July, noon. 291h-291l - ex p. 3 July
291m – pupa 2 " " – ex p. 4 July a.m.
291n, 291o – " 3 " — ⟹
291p — " 4 " a.m. – ex p. 6 July p.m. (subs * 294 j)
291q, 291r – ex p. 5 " " "
291s. – pup. 7 " " " ex p. 9 July a.m.
291t – " 8 " —

One of the forms of larvae is a small light-brown fuliginous-like form – different, I believe, from previous ones.

5 July. – Among the unsorted material of this lot, and also *292, there has been considerable reduction — due, I think, to the presence of slender very active larvae of Heteratopogon in both cases.

291u – ex p. 13 July a.m.

Tehuantepec. 1 July '05.

Hole in tree trunk - same grounds as 291. Contained only one kind of larva - apparently Stegomyia.

292 V - died in pupa.
292 ≏ - exp. 1 Aug. a.m.

292 a ≏ - pupa 2 July, a.m. - exp. 4 July 3 p.m.
292 b ≏ - 2 pupae 4 " p.m. (skins lost) - 1 exp. 6 July a.m.
292 c ≏ - pupa. 6 " a.m. - died in pupa.
292 d ≏ - " 7 " " "
292 e ≏ - " 8 " ——
292 f. " 9 " a.m.
292 g. " 14 " " " (skins lost) - exp. 16 July a.m.

292 h, m, m, - pupa. 25 + 26 July - 292 h, m, - exp. 27 July.
292 o ≏ - " 27 July - exp 29 July a.m. 292 m ≏ - exp. 28 July a.m.
292 P - pupa. 29 July a.m. - exp. 30 " " " (292 m ≏ - escaped)
292 V, ≏, - " 30 " " "
292 x ≏ Single larva from small knot hole at base of tree - contained about a spoonfull of water - the road along R.R. tracks, 3 July -
pupa 6 July, a.m. - died in pupa.

17 July - Water from same hole in tree as above (292 a ≏ - g.) contained larvae, but not so many as before - Holes *291 & *295 completely dried out as there has been no rain for some time.

292 h ≏ - from pupa, ex 18 July.
292 i ≏ - 2 pupae, 3 larval skins - 18 July a.m. - ex 21 July a.m.
292 j - 2 " no " " 20 " " - ex 22 " p.m.
292 k ≏ - 7 pupae (1 dead) + 7 larval skins - (2 sp. - one has tube longer, swollen; antennae larger; head + tube light brown - pupa. 24 July a.m. 3 ex p. 25 July and drowned - others died in pupa.

Tehuantepec 2 July 05.

Earthen jar in garden of bath-house, exposed to sun, contained small quantity of very warm water. Many larvae and pupae - When brought home a large part of the larvae were dead but the pupae all alive. Two forms of larvae, long-tubed Culex and Stegomyia -

293♀ - emerged from pupae 3 July
294♂ - " " " 4 " a.m.

Tehuantepec, 2 July 05.

Tank, in shady part of garden at public bath house, to receive dirty water. Many egg-boats floating on surface and many larvae of long-tubed Culex — no Stegomyia —

6 July — examined tank again and found it swarming with full-grown larvae and pupae — all the same species as above, one with shorter tube (fusco-pipiens) and another light brown form with short antennae, very short and stout breath-tube, and broad tracheal tubes (½ the width of body).

294a - pupa 3 July — ex p. 4 July 3 p.m.
294b, 294c " 4 " a.m. — ex 5 " " "
294d — " " " " " (shin bort) — ex p. 5 July a.m.
294e — " 5 " " " " " " — " " " p.m.
294f — " " " " " " ——— " " 7 " a.m.
294g — " 6 " " " 294i " " 8 " " "
294h, i — " 7 " " " ex p. 7 July p.m.

Error 294j — see 291j ———

294l, 294m, 294k — pup. 8 July — 294l, 294k — ex p. 10 July
294h — ex p. " " p.m.
294m — pup 9 " p.m. — ex p. 10 July
294f, 294o — " 9 " a.m.
294n — ex p. 10 July.
294p — pup. 13 July a.m. — ex p. 14 July a.m.

Tehuantepec 3 July 05.

Larvae and pupae from hole in another tree on same grounds as *291 and *292. All the larvae are one species - resembling triseriatus in appearance and action. Head small, dark ferruginous brown; stomach caecae nearly black; body color olive-grey; breathing tube nearly black, short and stout, swollen.

295a - pup. 4 July, a.m. — 6 July, p.m.
295b - from captured pupae - ex 4 July a.m. (1 larval, 6 pupal exuviae preserved sub 295b)
295c " " " " " " p.m. —
295d-295h — pup. 5 July a.m.
295i, j, k. — " 6 " " "
295l - from captured pupae - ex 6 July a.m.
295d, f., - died in pupa.
295g, h, k, - ex p. 7 July, a.m.
295i, j - " " 8 " " "
295m — " " 13 " " "

Tehuantepec. 3 July 05.

Very muddy roadway along R. R. tracks, beyond station. Small puddles (footprints etc.) contained larvae of two species — also a couple of small Anopheles larvae, the first found here.
The commoner Culex larva resembles salinarius, the other is a short tubed form, but only two were found and these pupated before notes could be taken.

296a – 296d – pup. 3 July, p.m.
296e – 296v " 4 " a.m.
296l, m, q, k, – died in pupa.
296w – captured pupae ex 5 July, a.m.
296a, c, d, f, p, – ex p. " " " " (296a escaped)
296g, h, i, j, l, m, o, r, s, v, " " " " p.m.
296e, t, " " 6 " a.m.
296x – pup. 6 July a.m. (died in pupa)
296z – " 7 " " "

Tehuantepec. 3 July '05.

Small ditch of muddy water beside R.R. tracks, close by where ♂296 were taken. Contained many pupae and some larvae of Psorophora and a few dos Culex discolor (?) – only one of these was alive when brought home. The Psorophora larvae are opaque creamy white, the tracheal tubes moderately broad, silvery; head very pale.

297♀, 297♂ – ex p. 5 July a.m.
297♀, 297♀ " " " " p.m.
297♂, 297♂ " " 6 " noon.

297♀ – imagos from pupae, ex 3 July
297♂ " " " " 4 "
297♀ Psorophora " " " 3 " (pupal skin preserved)
297♂–297♀ – pupa 4 July, a.m.
297♂ – imago from pupa, emerged 4 July, – dark portions were pale at first — pupal skin preserved.
297♀ (discolor) – pup. 4 July 3 p.m. – died in pupa.
297♂ — — " 5 " a.m.

Towards evening the place was visited again and in the meantime the water had nearly all dried out – only a little remained in two depressions and from this more Psorophora larvae and two more discolor (?) were obtained, besides pupae that produced the jamaicensis (?) form.

297♂ – from captured pupae, ex 5 July, a.m.
297♀, 297♂ – pupa 5 July, a.m. (297♀, ♀, – died in pupa).
297♀ – " " " noon. –
297♂ – " 7 " p.m. – ex p. 9 July a.m.
297♂, ♀, ♀, " 8 " a.m. " " 10 " " "

Temperaturas en Salina Cruz, Oax., Mex.

| Fechas | Máxima y Mínima durante 12 hs. de 6h 23 A.M. á 6h 23 P.M. tiempo de México. | | Termóm. centígrado media |
|---|---|---|---|
| | centígrado Durante la noche De 6h 23 P.M. á 6h 23 A.M. | centígrado. Durante el dja. De 6h 23 A.M. á 6h 23 P.M | |
| Julio 7 /905 | — | 30.7 — 25.4 | 28.°43 |
| 8 | 29.4 — 24.0 | 28.2 - 24.5 | 26.77 |
| 9 | 27.9 — 24.9 | 31.0 — 25.4 | 28.93 |
| 10 | 30.6 - 25.9 | 32.0 — 26.5 | 29.87 |
| 11 | 31.1 -26.4 | 31.8 — 26.4 | 29.17 |
| 12 | 30.6 — 26.0 | 31.6 - 26.7 | 29.91 |
| 13 | 31.4 - 26.9 | 33.0 - 27.4 | 30.67 |
| 14 | 32.0 - 25.9 | 32.0 - 26.0 | 29.27 |
| 15 | 30.0 - 27.2 | 32.3 - 28.0 | 30.03 |
| 16 | 30.0 - 27.4 | 32.0 - 28.1 | 30.00 |
| 17 | 29.9 - 26.0 | 32.0 — 26.8 | 29.73 |
| 18 | 30.9 - 27.1 | | |

Salina Cruz, Julio 18 de 1905-

Salina Cruz, Mex. 7 July 05.

Small stream flowing off steep hillside to the eastward of the town - lost itself in the lower part of its course where there was only a little standing water in places - In one of these small puddles a single Anopheles larva was found but this died - To the northward another little stream came off the hills and in a level place overflowed a piece of road. Here two Anopheles larvae were found among grass at the margin. One of these -

298 b

298 a - pupated 8 July — ex. 10 July a.m.

(9 July)

298 c, 298 d - Quarantine station for Chinese — buildings on piles, puddles under them — many dead mosquitoes floating on water - Two Anopheles larvae - no Culex -

298 c - pup. 10 July p.m. — ex 12 July a.m.

10 July - Tank of clear water (from stream) at salt works, — harbor terminal - A few Culex larvae, apparently common long-tubed form -

298 e, 298 f - pup. 11 July, a.m. — ex 12 July, a.m.

Salina Cruz, Mex. 7 July '05.

In the morning some puddles with mosquito larvae were noticed in pasture across large, level open ground in central part of town. When visited in the afternoon and all dried up but one puddle. This had greatly decreased and was in large part covered with flakey scum. The larvae would dodge under this. Two forms of larvae were noticed. The larger was a rather pale greenish-grey larva and appeared to be jamaicensis, the other smaller, dark, with short stout breathing tube and very broad tracheal tubes. Head small, blind angles prominent. Hairs short.

299♀ - ♀. - pup. 8 July. — ex p. 10 July
299♀ — captured pupae ex 9 July.
299♀ - ♀ - pup. 10 July -
299♀ — " " " (skins lost) — 3 ex p. 11 July a.m.
299♀ — " 11 July a.m. " " - ex p. 12 July a.m.
299♀ - ♂, ♀, - ex p. 11 " "
299♀, ♀, ♀, pup. 12 July — 299♀ - ex p. 14 July a.m.
299♀ - " " (skin lost) - ex p. 13 July a.m.
299♀, ♀ — pup. 13 " a.m. — 299♀ ex p. 14 " " "
299♀, ♀, ♀, died in pupa.

299♀ Ditch of stagnant water behind hotel, used for watering vegetable garden; at first contained great numbers of the common long-tubed Culex, later few larvae of another form.
299♀a pup. 21 July - ex p. 23 July.

Salina Cruz, Mex. 9 July '05.

West of the town, behind a couple of mountain ridges, is a lake from which salt is obtained, separated from the shore by a strip of sandy land. In a shallow puddle of discoloured water, among shrubbery, and close to a small pond, were some small dark coloured mosquito larvae. Before they were examined or isolated all but one had been destroyed by Dytiscid larvae. The remaining larva is of the salinarius type.

12 July. Visited same pool and obtained more larvae of same kind. They are dark — dull grey-brown, head yellow-brown. Breathing tube nearly black, moderate, tapering, straight. Siphon of abd. segts. dark — 4 the segt. pale. Tracheae narrow. Lateral hairs, abd. + thorax, short —

300a - captured pupae - ex 14 July.
300b - 300i - pup. 14 July a.m.
300j (skins lost) " " " " — ex 15 July a.m.
300k, 300l - " 15 " " — 300k " 17 " " "
300m, 300n, (skins lost) " " " " — ex 17 " " "
300i - exp. 15 July a.m. — 300c, 300f died in pupa.
300b, d, e, g, h, j, l, - exp. 16 July a.m.

Salina Cruz, Mex. 7 July 05.

Ditch of filthy water, without trace of salt, near salt works - Contained larvae of the ordinary long-tube type and a few jamaicensis (?). From
301a - the pupae some Anopheles were obtained.
(captured) ex pupa 10, 11 July -

301b, 301c, — pup. 13 July a.m. — ex p. 14 July a.m.
301d — " " " " (skin lost) " " " " "
301e — " 14 " " " — ex 15 " " "

Salina Cruz, Mex. 10 July '05.

Valley to the eastward beyond mountain ridge. Moister + more luxuriant vegetation there as at Sal Cr. About 3 or 4 miles away, a muddy road with puddles & and in part impassable. Water swarming in most places with jamaicensis (?) larvae – no others. One Psorophora larva was found, pupated in transit and died.

~~302 a~~ ~~ex 12 July a.m.~~
~~303 b 305 e – pup. 11 July noon.~~
302 a – 302 d pup. 11 July noon.
302 e – captured " – ex 12 July.
302 f, 302 g – pup. 11 July, p.m. – ex 12 July p.m.
302 h, 302 i " 12 " – ex 13 " a.m.

302 c, 302 b – ex p. 12 July
~~302 c~~ 302 d – died in pupa.

Salina Cruz, Mex. 10 July 05.

Pool of stagnant water, in thick woods beyond
#302. – flakes of scum on surface. There were some
Anopheles larvae and more common a long tubed Culex
larva, also a few of a short tubed form difficult to
capture as it is shy and hides on the bottom –

303a – captured pupae – ex 12 July a.m.
303b–303o – pupt. 11 July, before noon –
303d – ex 12 July a.m.
303c, e, i, j, k, l, m, – ex 12 July.
303b, d, f, g, h, n, o, – " 13 " a.m.
303p – pupt. 13 July, a.m. – ex 14 " " "
303q – " 14 " " " – ex 16 " " "
303r, 303s " 15 " " " " – 303s ex 16 p.m., 303s died in pupa
303t — " 16 " " " " — ex p. 17 July p.m.

Salina Cruz, Mex. 11 July 05.

Beach to eastward of town – some ponds and smaller pools and puddles on the lower land behind beach. Examined many but found no larvae, most of them contained very small fish, tadpoles, Corixa &c.

One small shallow pool, in grassy place, beside clump of bushes, contained many very small larvae (2d stage?) and two bottles were filled. They appeared to be the jamaicensis form and amongst them, of about the same size, were a few Psorophora. On the morning of the 13th ~~only one~~ each bottle contained only one good sized Psorophora larva. These were fed on the 14th with larvae of the common long-tubed form obtained from a small hole in same region. A number of long-tubes isolated. One larva in this last lot is of the jamaicensis form.

304a — 304i – pup. 14 July p.m. – 304c, 304j died in pupa
304k – 304o — " 15 " a.m.
304p (Psorophora) " 16 " " " — ex 17 July p.m.
304q — " " " " " " " " " "

304r – 304x – ex p. 16 July a.m. (304h escaped)
304k, l, n, o, m – " " 17 " " " (304m " )

304n (Psorophora) – pup. 17 July '05 a.m. – ex 18 July 11 a.m.
304s – 304v — " " " " " – ~~ex~~
304s — ex p. 17 July p.m. – 304w, 304v, – ex 18 July 1 a.m.
304t – died in pupa.

Salina Cruz. Mex. 14 July 05.

Northward along Tehuantepec R.R. — a couple of kilometers out, where the country is hilly with small streams trickling down, were small pools with green algae and many Anopheles larvae, also a few long-tubed Culex. The full grown " " were all dead when brought home - tangled up in the algae - but the smaller ones survived.

305a-305c - pup. 15 July a.m. - ex p. 17 July a.m.
305m-305o " 16 " p.m. - 305m died in pupa.
305p. —— " 17 " a.m. - died in pupa.
305q —— " 17 " " " - ex p. 18 July a.m.
305o - ex pup. " " p.m.

Farther on, beside a brook, puddle of muddy water with fragments of scum floating upon it contained larvae of long-tubed Culex, but not numerous.

305d-m - pup. 15 July a.m.
305i - ex " 16 " p.m. 305k - died in pupa.
305d-h, j, l, m, - ex p. 17 July a.m.

to Salina Cruz, Mex. 15 July '05

Wooded valley to the eastward. In a dry stream-bed, a few klm. out, some puddles of muddy water ~~top~~ the result of the rain of night before last. Puddles contained small jamaicensis (?) larvae and Psorophora larvae a trifle larger. Nine of these last were captured and are growing rapidly, being fed with abundant jamaicensis larvae obtained from a muddy puddle in town.

16 July. Visited same place again in the afternoon. The puddles from which larvae had been obtained were entirely dried up — also a road puddle in which great numbers of the jamaicensis form had been noticed.

306b, 306a - pup. 17 July 11 a.m. — ex p. 18 July 11 a.m.
306c - " " " 1 p.m. — " " " " 1 p.m.
306f, 306d, 306e - " 18 " a.m.
306g, h, i, — " " " " "
306j — " 20 " " " — died in pupa.
306k (discolor?) " 29 " " " — ex p. 1 Aug. a.m.
306e, 306f - ex p. 19 July -

Aedes kenabri Coq.

307.

Salina Cruz, Mex. 13 July '05.

Same stream bed as #306, farther down. The presence of blue mosquitoes led to a search for hollow trees and at last one was found. A tree perhaps a foot through had a hole into which hand could barely be inserted. Contained liquid dark as strong coffee and in this were larvae and pupae. A number of the larvae died in transit. The larva is large, very elongate, opaque, greyish on dorsum, head and tube black; head very small; breath.-tube short & stout, tapering. The larva reminds one of tuberculatus.

307a Mosquitoes which came to bite while I was at work at this tree. The blue mosquitoes, a small and a larger one, suck blood.

307b - from captured pupa ex 17 July p.m.
307c - ♂ - pup. 18 July, a.m. - 307d, 307e, f, - died in pupa.
307h. " " " p.m. - ex p. 22 July, a.m.
307i — " 20 " " " — " " 23 " " "
307d, 307g - ex p. 21 " a.m.

Salina Cruz, Mex. 16 July 05.

Hole in tree on the bank of a little stream, same region as 306 + 307. The hole was between the two diverging trunks of a small tree and nearly on a level with the ground. It was perhaps 3 in. in diam. and quite deep and contained about a pint of amber-gell. water. There were larvae of two species and several pupae[x]. The larger form of larvae are after the tuberiatus type, brownish, the head reddish-brown, tube nearly black. Tracheal tubes broad, brown. Breathing-tube stout, tapering towards the tip, almost bottle-shaped. no gills.

Much more abundant was a larva of the fitiens type; clear brown; tracheae narrow; lateral hairs moderate; head tufts ample; breathing-tube long, stout at base, tapering; no gills.

308a - pup. 17 July 1 p.m.
308b - from captured pupae, ex 18 July -
308c - pup. 20 July, a.m. - " 22 " a.m.
308d, e " 22 " " " (on 21 July?) - ex p. 25 July.

[x] Also larvae of Cyphon and another unknown form (preserved).

Psorophora ciliata + P. virescens A. euplocamus n. sp.
J. posticata Wied. A. cinereus.

309.

Almoloya, Oaxaca, Mex. 19 July '05.

Large muddy puddle in bed of stream in well-shaded ravine a short distance to eastward of settlement and somewhat down hill. Contained numerous larvae several species - Anopheles, still very small; two Culex forms - one a large, very pale form with very large antennae with tuft at the middle, - tracheal tubes narrow (about twice as wide as in tenitans; breath-tube large and enormously swollen, pale, the tracheae greatly dilated inside, brownish yellow. Tip of tube brown - Lateral hairs on thorax and abd. segts 1 and 2 very short, obsolete on other segts. Eyes large - head-hairs 5-3-2+ - (3d stage) - The full grown larva is tinged with brown; the tracheal tubes grey, somewhat dilated, brown in the breath-tube; lateral hairs present on all segments but short; head hairs 8-2-2+. There were but few larvae of this form - perhaps on account of more rapid development. The following form was very numerous - Smaller, with small ferruginous head and small antennae; body pale, tracheal tubes very broad, brownish; breath-tube short and very stout, brown? Remains much at the surface

There was also a Psorophora with these - one full grown larva and seven pupae were taken.

309a (Psorophora) - pupa. 20 July a.m. - ex p. 22 July a.m.
309b — 309f — " " " "

Close to puddle was a hole in the bank, at base of tree, containing clear water. Very many larvae of the smaller form above, and two of the larger with swollen tube. A single larva of the fifth form, but with short, bottle-shaped tube, very pale, tracheal tubes narrow.

309g - 2 pupae, 1 skin - pupa. 20 July, a.m.
309h* (bottle-tube) — " " " p.m. - ex p. 22 July a.m.

* Culex proclamator D. & K.

309i — ♀. — pup. 21 July a.m.
309j — captured pupae — ex 21 " " "
309k — Psorophora from captured pupa, ex ♀. 22 July a.m.
309l — " " " " " " " " " "
309m — " " " " " " " " " "

20 July. Visited puddles again and obtained several more pupae of Psorophora. A few more larvae with swollen tube. Pupae are now far more abundant than larvae, particularly of the smallest, form great numbers. Also many Anopheles larvae - these have the thorax whitish and usually the third abd. segt. pale, also the last two.

There was also one very small larva of Sayomyia.

22 July. Puddles from which material was obtained are all dried up, in spite of daily showers.

309c - ex ♀. 21 July a.m. — 309d, 309e - ex ♀. 21 July p.m.
309b, f, g - " " " " noon -
309i, j, o, " " 22 " a.m.
309n, 309k, m, " " " p.m.

309w - from captured pupae - ex 21 + 22 July.
309v - pup. 28 July a.m. — died in pupa.
309w - " 1 Aug. " " — ex ♀. 3 Aug.
309xa - xm - pup. 22 July a.m.
309xo — " " " " noon — died in pupa.
309xj, 309l, 309p, 309xn. - died in pupa.
309xa - xg, xi, xk, - ex ♀. 23 July a.m — noon.
309xh, xm, — " " 24 " " "
309y - pup. 4 Aug. — ex ♀. 6 Aug.

Almoloya, Oax., Mex. 20 July '05.

Same arroyo as #309. Depressions on boulders in stream-bed containing a small amount of water.
310a One contained a single pupa and a very small larva. Another, among a few dead leaves and debris,
310b 2 pupae, and three larvae.

The larvae are elongate pale greyish, head and breath. tube very dark brown. Thoracic shield pale brown; breath. tube very short, tapering; lateral hairs very short.

310c - e - pup. 21 July, a.m. - ecl. 23 July a.m.
310a, b, - ecl " 22 "

Almoloya, Oax., Mex. 21 July '05.

Small hole in tree ~~entered~~ in same ravine as #309 and only a short distance away. Contained about a half pint of water and in it a number of larvae, apparently the same long-tubed form as in #308. Also one small short-tubed larva and two very young larvae of Megarhinus - the larger one of these moulted July 22, is being fed with common hog-tubes from a ditch in settlement and is growing. Color of body dull wine ~~color~~ red, digestive tract black, head yellow brown. Floats at surface in nearly horizontal position.

311a - 23 July - smallest Megarhinus died - preserved.

311b Single short-tubed Culex moulted 22 July - died 23 July.

The long-tubed forms in this lot are of two sp., one with extremely long slender breath. tube.

311c - pup 30 July a.m. - died in pupa.

Almoloya, Oax., Mex. 21 July 05.

Waterfalls and swimming pool with rock banks surrounded by trees, a short distance south of settlement. Large pot-hole with clear water and dead leaves. Many larvae and pupae of a small long-tubed form - pale yellowish. Lies on bottom on its back to feed. There are also a few larvae of with short but not very stout tube with three long hair-pencils.

312a - from captured pupae, ex 22 July
312b - f - pup. 23 July a.m.
312g - k - " " " p.m. — 312l - lost.
312c, g, h, i, k - died in pupa.
312b, d, f, - ex p. 24 July a.m. — 312e, j, p, died in pupa.
312l - captured pupae - ex 23 July
312m - q - pup. 26 July a.m. — 312m, o, r ex p. 27 July.
(or 25 -) 312n, " " " "
312q " " 28 " a.m.

Almoloya, Oax., Mex. 22 July '05.

Hole in small tree, ~~—~~ on river bank near * 312. Contained a small amount of dark water and six larvae of fair size and also very small ones.

Color brown, Head with median spot — antennae very slender, dark. ~~Brea~~ Tracheal tubes very broad, brown. Lateral hairs short. Breath-tube dark, rather short, swollen.

313 ♀ - pup. 29 July a.m. — exp. 30 July a.m.
313 ♂ - 1 Aug. a.m. — exp. 3 Aug.

Almoloya, Oax., Mex. 22 July '05.

Same arroyo as #309 - farther down -
Small deep pot-hole in large boulder in stream-
bed. Water clear with a little muddy sediment.
Contained larvae, mostly small, with ~~antlers~~ short,
stout tubes. Thy are dark, the tracheae brwoad,
head brown, round; stomach cecae dark -

All dead 23 July - Ceratopogon larvae remain.

~~Almolonga, Qua.~~
Acapulco, Mex. 28 July '05.

Court-yard of hotel contains plants with earthenware pots, with rim to hold water to keep plants moist. In larger rims where there was permanent water there were numerous larvae and pupae — apparently all Stegomyia.

315 a - ~~f~~ - pup. 29 July a.m.
315 k, l, - " 30 " - "
315 b, c, i, - exp. 30 " p.m.
315 d, e, f, g, j, k, l - " " 31 " a.m.

315 a, k, - exp. 30 July a.m.

~~At~~ Acapulco, Mex. 28 July '05.

Ditch of nearly stagnant water in eastern part of town, in a lane. Contained small larvae which proved to be all Prorophora. (13 of them).
All moulted 29 July a.m. —
Were fed at first with small Stegomyia larvae and when these gave out with a long-tubed Culex (*317).
Do not take kindly to the last, apparently they are too much at the surface.

316a - 29 July - Single Prorophora larva from puddle of muddy water in open ground on neck of land towards the sea. pupt. 31 July a.m.
316b-i, - pupt. 31 " " " 316j, k, - pupt. 31 July p.m.
316a, d, b, c, f, h, — died in pupa.
316g - ex pupa 1 Aug. a.m. ("water-sprawled")
316i " " " "
316j, k, " " 3 Aug.

Acapulco, Mex. 29 July '05.

Valley on other side of ridge, behind town - close to the stream, "el rio", a couple of tanks ~~for~~ of masonry for washing and bathing. One of these contained no mosquito larvae whatever, the other was swarming with larvae of all sizes and pupae of a long-tubed form, also egg-boats. Larvae apparently all one species.

317[a] - [h], - pup. 30 July a.m.
317[i] - [p]. - " " " p.m.
317 [v], [w], [x] - " 1 Aug. a.m.
317[a] - [d], [f], [i], [k], [m], [o], [p]. - ex p. 1 Aug. a.m.
317[n] - [u] - ex p. 1 Aug. p.m.
317[v], 317[w] (2 spec.), - pup. 2 Aug.
317[x] - ex p. 3 Aug.

317[x] Single larva from small puddle of clear water in stream-bed - eastern end of town. — ~~died in pupa~~

Died in pupa 317[e], [f], [h], [i], [l], [m], [q]
317[x] pup. 4 Aug. - ~~ex p.~~ died in pupa.
317[w] - ex p. 4 Aug.

Acapulco, Mex. 30 July '05.

Hollow in large surface root of a tree, contained more than a quart of very dark liquid and in it numerous larvae - apparently all of one species. Location on other side of ridge (behind town), near a "poso" used for washing and drinking, a little stream close by, a number of large mango trees scattered about. The larvae are very dark, short tubed; head and tube nearly black.

318 a - h - pupt. 2 Aug.
318 i - m - " 3 Aug. a.m.
318 a, c, d, e, exp. 4 " — 318 f — died in pupa.
318 b, m — " " 5 "
318 j, k, m, — " " 6 "
318 o - n - pupt. 7 Aug.
318 n ex " " "
318 g, l, pupt. 10 " — exp. 12 Aug.
318 m, p. " 14 " (one pupa) — exp. 15 Aug. a.m.
318 m — exp. 10 Sep.

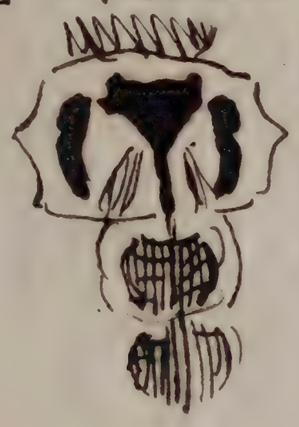
Acapulco, Mex. 30 July 05.

Small puddles of clear water along stream ("el rio") with growth of algae. Numerous Anopheles larvae, mostly small. Also in a puddle without algae a couple of long-tubed Culex larvae.

319a - pup. 31 July a.m.
319b, c - " 1 Aug. " "
319d - died in pupa.
319e, c, - exp. 1 Aug. a.m.
319d - pup. 2 Aug (skin lost) — exp. 5 Aug.
319e e " " " (2 pupae, 1 skin broken)
319f, - " 4 " — exp. 6 Aug.
319g - exp. 4 Aug.
319g. - pup. 5 "
319h - captured pupa, ex 31 July.
319i - no skins, " 2 Aug.

Champerico, Guatemala. 4 Aug. 05.

East of town near indian village. Behind beach a big marsh. On its edge an isolated puddle, with tufts of sedge, of slightly brackish water. This was swarming with mosquito larvae, all nearly full grown.

Larvae have small dark brown head, the antennae rather small and very slender. Thorax with short lateral hairs - none on front margin. Stomach cecae black - form  Abdomen with still shorter lateral hairs. Tracheae broad, brownish-grey. Breathing tube short and stout, dark brownish.

320a - e - pupt. 10 Aug. 320a-e - exp. 12 Aug.
320f —— " 13 " — exp. 14 Aug. a.m.
320g — " 12 " " " 15 "
320h - k - exp. 13 Aug. or before - no dates kept.
320l - pupt. 14 Aug. a.m. — exp. 15 Aug. a.m.
320m - " 15 " " " — died.
320n, o, " 22 " " " (or 21 Aug.)
320n - exp. 23 Aug. —
320o - died in pupa.

San José de Guatemala 6 & 7 Aug. '05.

Well shaded country roads behind town - in many places impassable on account of large puddles and mud from recent rains. Only one puddle, near town, contained larvae in smaller detached portions. A short tubed form was very numerous and close by were some long-tubed larvae of various sizes.

321 a — pup. 7 Aug. — died.
321 a — " ? — ex p. 10 Aug.
~~321 b~~ ~~———————~~ ~~———— 12 ————~~
321 b - i — ex p. 13 Aug. or before — no dates kept.
321 i — " " " " ———— " " " .
321 k. —— pup. 16 Aug. — ex 18 Aug.

321 m - pupae, no skins, ex 9 & 10 Aug.

San José de Guatemala, 6 Aug. '05.

Small hole in tree, in shady thicket, close to small pond. Contained two kinds of larvae — a few, nearly full-grown, of a short tubed form and some very small long-tubed larvae.
All the larvae died except one of the long-tubed ones.

322 ♂ - pup. 12 Aug — ex. 14 Aug. a.m.

In the pond near by, among Lemna, were a very few larvae of the tenitans type. but these all died -

San Salvador, C. A. 14 Aug. 05.

Ditch in street on outskirts, beyond penitentiary; water filthy with a slight current. Numerous larvae and pupae of Culex – all one species – a pale long-tubed larva.

16 Aug. The same form was found, associated with larvae of Stegomyia fasciata, in an old wash-boiler in the back yard of the Amer. Consulate.

323a from captured pupae, ex 16 Aug.
323b - m - pup. 16 Aug.
323b - i - ex " 18 " — 323f - m, died.

323o Single pupa from spring-hole in paved street, steep descent towards river. ex p. 16 Aug.

San Salvador, C. A. 16 Aug. '05.

Beyond village of Acahuaca. Stream flowing at bottom of a deep ravine. At the mouth of a ~~canyon~~ cañon cut by small stream and furnishing access to river, a number of rock pools in stream-bed. One of these contained larvae of various sizes, mostly ~~adult~~ long-tubed.

324 a – pup. 16 Aug. – ex p. 18 Aug.

324 b – 3 pupae from larvae not isolated (skins lost) ex p. 19 Aug.

Sonsonate, Salv. 18 Aug. '05.

Village of San Antonio, west of town. On bank of stream, large tree with wide-spreading surface-roots. Two holes in roots contained water, one numerous larvae, a few pupae and several egg-boats. Larvae are mostly short-tubed, apparently Stegomyia. A few light-brown long-tubed larvae. From the smaller hole only two long-tubed larvae were obtained.

325a – captured pupae – ex 18 Aug. p.m.
325b – " " " 19 " a.m. (Steg. fasciata)
325c – ♂ – pup. 22 Aug. a.m. (or 21 Aug.)
325c, d, f, – ex pup. 23 " — 325♂ died in pupa.
325h, i, – pup. 24 Aug. a.m.
325j – no skins, ex p. 23, 24, 25 Aug.
325e, k – ex p. 25 Aug.
325i – " " 26 " p.m.

29 Aug. – Examined hole again and obtained many larvae, mostly small. 4 pupae.

325k, l, – pup. 30 Aug. a.m. – 325l – ex p. 31 Aug. a.m.
325k " " " " p.m.
325m – captured pupae, ex 30 + 31 Aug.
325n – pup. 1 Sep. – ex p. 3 Sep.

Sonsonate, Salv. 19 Aug. 05.

Densely shaded and weed grown plantation pathway to eastward of town. Mosquitoes of a number of species were abundant. Halved cocoanuts filled with rain water, discoloured by decaying animal and vegetable matter, contained numerous Sedid larvae and pupae. The larvae are opaque cream-white – head ferruginous yellow; tube and anal plate brown; trachea narrow, but slightly dilated, grey; stomach cecae small; digestive tract brown; thoracic hairs short; lateral hairs of abd. segts. moderately long, a second sub-dorsal series somewhat shorter; ~~abdom~~ anal segt. greatly dilated towards orifice, with four large, rather long tracheal gills which are almost continuously vibrated – several groups of terminal hairs of same length as gills. When at the surface the larvae hang perpendicularly. They feed upon dead insects that have fallen into the water, the bodies of some dead larvae were eaten into by them. The water contained dead ants, Staphylinids, flies etc.

The pupa is pitchy brown, the connecting ligaments dirty white, pale brownish beneath. Trumpets dull orange, rather short, very broad at tip. Abdomen long and pendant when the pupa is at the surface. Paddles very short, dull yellow. Last two segments with lateral & ample fan tufts of hairs. The pupa can remain at the bottom for some time without moving and without any hold – even in a smooth bottle.

326j There was a single larva of the long-tubed tenitans type.

326a – pupae without skins – ex 20 Aug.
326b, c – pup. 22 Aug. – 326b ex p. 25 Aug. – 326c died in p.
326d – pupae from a single overwintering husk which averaged smaller than other lots and produced predominatingly males. — ex 21 + 22 Aug.
326e – 326w – pup. 23 Aug.
326v – Another lot of pupae, emerged 21–23 Aug., produced 36 ♂, 16 ♀.
326w, x, – pup. 24 Aug. a.m.
326y, z – " 25 " — ex 28 Aug.

326 i. – ex p. 25 Aug.
326h, k, l, o, p, q, w, – ex p. 26 Aug. a.m. 326m, n, – died.
326s, t, u, — " " " " p.m. 326z — "
326e, f, g, r, v, x, " " 27 " a.m.
326za, zb, zc, zd, – pupa " " " "
326ze — zo — " 28 " " " (or 28 Aug.)
326zd – ex p. 30 Aug. a.m.
326zf – zg – pup. 30 " " "
326za, zb, zc, zh – ex p. 31 Aug. a.m. 326zg ex p. 31 Aug. p.m. (escaped)
326zv – zy – pup. – 31 Aug. a.m.
326zi, zk – ex p. " " p.m.
326xa – xd – pup. 1 Sept.
326ze, zf, – zo – ex p. 1 Sept.
326zo, zp — ex " 2 "
326va, vb, — pup. " "
326vf — ex " 3 "
326vv — " " 5 "
326xa, xc, — ex p. " "

326xa, xb, – pup. 2 Sept.
326xc, — " 3 "

Sonsonate, Salv. 20 Aug. '05.

Country road south-east ward. Three or four miles from town, in well shaded part, puddle in wagon track containing numerous larvae and pupae of a very small Culex and a few small Anopheles larvae. The Culex larvae were of the long tubed type, very pale and difficult to see. A great number of other puddles on this road were examined but no larvae found.

327a - from pupae, ex 21 + 22 Aug.

All the isolated specimens of the larvae died. On Aug. 24 the locality was visited again but the puddles had all dried up ~~that~~ there had been no rain for two days while before it had rained nightly.

Azalea, Sabr. 21 Aug. '05.

On the road to public bath, Cocoa-nut husks containing more or less foul and discolored water. Contained many larvae apparently all the same as #326 On account of sickness the larvae were neglected and two bottles all the larvae died. The third bottle was in examined 26 Aug.

328a - imagos that emerged 22+23 Aug.
328b - pupa 26 Aug.
328c - ♂ - " 27 " a.m. — 328h, i, d, — died in pupa.
328e, c, g, f, - exp. 30 Aug. a.m. - 328g - exp. 30 Aug. p.m.
328j. - pup. 31 Aug. a.m.
328k, l, - " 1 Sep.

31 Aug. Same locality visited again and numerous cocoa-nut-husks examined. Above larvae of Aedes very numerous. Also several egg-boats, presumably of same, Eggs grey. in round raft, upright, sides not elevated, about 100 eggs in a raft. Also obtained three larvae of Megarhinus and several of the long tubed form, like #330. All but " larvae died in transit on board ship.

328m - pup. 9 or 10 Sep. — exp. 12 Sep. a.m.
328n - " 14 Sep. a.m. — " " 18 " " " (Megarhinus)
328o - " 16 " " " " - " " 19 " —— "

The Megarhinus larvae, in the absence of the larvae they were found associated with, were fed upon Stegomyia larvae, to which they did not seem to take kindly, and afterwards upon Deinocerites, which seemed to suit them better. Third larva preserved 16 Sep. sub. 328p.
328q - pup. 16 Sep. a.m.
328r - " " " p.m. — ex 19 or 20 Sep.

Acajutla, Salv. 28 Aug. '05.

Small stream in rocky bed a short distance from the sea. Pot-hole of turbid water contained a number of small Culex larvae and two pupae. Larvae of territans type, small and very pale. Digestive tract dark and on ~~each~~ abd. segts. 1-7 a black median spot. Segts. 6+7 with a dark broad margin behind. Sides of segts. marked with dark. Thorax + head very large. Head with median brown spot. Antennae prominent. Hairs of thorax rather short. ~~Rests~~ Lies upon its back on the bottom when feeding.

329a - 2 captured pupae, ex 29 Aug.

Larvae all died.

Sorsonate, Salv. 30 Aug. '05.

"Finca" (plantation) of Dr. Rivera, just out of town. Larvae from water in cocoa-nut husks. Contained several species. One husk contained two larvae and one pupa of Megarhinus. Larvae dark purplish.

330a captured pupa, ex 31 Aug.
330b, pup. 30 Aug. p. m. — died.
330c " 3 Sep. — exp. 6 or 7 Sep. ✻

Other larvae were the same common form as 326 + 328. ✻ ✻
Another similar form, smaller, with much longer body and shining trachae. Also a dark, short tubed form, like 318, ✻ and a light brown, long-tubed form.

330c, d, - pup. 2 Sep. — 330d, g, - exp. 5 Sep.
330f, g, " 3 "
330h - " 1 " — ex 3 Sep.
330i, j, l, " 5 " — 330i-, l, - exp. 8 Sep. a. m. { Error! skin 330j, marked 330h.
330k. — " " " (skin lost) — exp. 6 Sep. ← imago 330j, lost
330m, n, " " " ——— exp. 7 Sep. a. m.
330o, p - " 7 " a. m. - ——— died in pupa.
330q, — " " " " " (skin lost) - " " "
330r — 3 pupae, 8 or 9 Sep., 1 skin — 330s - " " "
330s — (2) pup 9 or 10 " 330m, 330s, x, - died in pupa.
330t, u, v, - " " " " 330v - exp. 12 Sep. a. m.
330w, x, y, - " " " " ——— 330w, y, - exp. 11 Sep. noon.
330z, za, zb, " 11 " a. m. 330u " " 13 " a. m.
330zc, — 3 pupae, no skins - 11 Sep. a. m.
330zd, ze, zf, - pup. 12 Sep. a. m. — 330zg, zf, - exp. 15 Sep. a. m.
330zg. - no skin, " " " " " 330zd — " " 17 " " "
330zh - " " (2) " 13 " " " - exp. 16 Sep. a. m.
330zi, - " " " " " " " - exp. 16 Sep. a. m.
330zk, zl, ——— " " " " " " - " " " " " "
330t, u, z, za, zb, zc, - exp. 14 Sep. a. m.
330zk, zm, - pup. 15 Sep. a. m. - died in pupa.
330zn - pup. 17 Sep. - exp. 20 Sep. || 330ze - pup. 22 Sep. a. m. - exp. 26 Sep.

330a - exp. 1 Sep. (no skin)

330zk - pup. 23 Sep. p. m. - exp 26 Sep.

Puntarenas, Costa Rica 7 Sep. '05.

Outskirts of town at the west end. Isolated house close by Cocoa-nut grove. Cocoa-nut husk in door-yard, full of water, contained larvae. Sorted 11 Sep.

331 a - 2 pupae-no skins

331 b, c, d. Larvae. - pup. 12 Sep. a.m. - ex ♀. 14 Sep. a.m.

Kerosene tin in yard contained water and numerous larvae of Stegomyia. Preserved sub. 331 e.

331 f - imagos " ex ♀. 10 + 11 Sep.

331 a - ex ♀. 13 Sep.

~~Rio Grasimad~~ Rio Aranjuez near Puntarenas, Costa Rica. 8 Sep. 1905.

Expedition to opposite ~~mouth~~ shore of to northward of Town. Ascended a mangrove lined inlet to the ~~Grasimado~~ Aranjuez – a small river, – and took the trail to "Las Loras", a plantation. The path at first very muddy, with hoof tracks full of water. Many of the holes contained larvae, a small very dark form in great numbers which have the habit of massing together. Soon Psorophora larvae were also found and turned out to be quite numerous – but where they occured the other larvae were few or absent.
One larva of Janthinosoma was also taken.

332 a – 4 Psoroph., pup. 9 Sep. a.m. — 2 exp. 10 Sep. a.m., 2 died.
332 b – 1 " " " " " . — ex 10 Sep. a.m.
332 c " " (skin lost) " 10 " a.m. – " 11 " p.m.

The small larvae have very broad, dark brown tracheae; thorax translucent, the cecae black, head dark at base and along sutures.

13 Sep. As the larvae did not do well and are rapidly dying off, I visited the place again. As there had been plenty of rain in the meantime the puddles were still there but no trace of the larvae.

332 d – pup. 17 Sep. a.m.
332 e, f, – " 18 " " "
332 g – exp. " " p.m.

"Las Loras" near Puntarenas, Costa Rica. 8+9 Sep.'05.

In the forest beyond settlement "Las Loras", ~~[illegible]~~ on Quasimal River. Pond chocked by vegetation – grass, herbs, and shrubbery – dried up in dry season.

Contained numerous mosquito larvae. Most abundant those of Janthinosoma; pale yellowish, with prominent antennae and swollen breathing-tube. They float at the surface with body nearly perpendicular. Another form of nearly the same size, with short breathing tube, was very dark, only the thorax paler. Comparatively rare and all pupated before close examination could be made. A third form is a very small larva resembling Culex territans — lies on the bottom back downward and moves by tremorous jerks. Psorophora larvae were not rare and were darker in color (dull brown on dorsum) than those of *332.*

333a – pup. 9 Sep. p.m. — died.
333b,c, " " " " — ex p. 11 Sep. a.m.
333d,e,f, " 10 " a.m. — 333f – ex p. 11 Sep. noon.
333g,h, " " " noon.
333i – (2 Janthinos.) pup. 10 Sep. — died.
333j – 3 pup. (4 skins (Janthin.) pup. 10 Sep. noon.
333k,l,m,n, – pup. 10 Sep. a.m. — 333l,n, – ex p. 11 Sep. p.m.
333o – (Psorophr.) " " " p.m. 333n – died.
333p,q,r,s,t,u, – " 11 " a.m. — 333p,q,s,t,u, – ex p. 13 Sep. a.m.
333v – no skins, ex p. " " —— 333s – image lost.

* No pupae were present and all the larvae of Janthinosoma, and the dark form, were of nearly the same size; about full grown.

333d,e,g,h,j,m,o, – ex p. 12 Sep. a.m.
333w – pup. (2) 12 Sep. a.m. — ex p. 13 Sep.
333x,y, – " – " " " " — " " 14 " a.m. (333y – image lost)

"Las Loras" near Puntarenas, Costa Rica. 9 Sep-05.

Shallow pool, partly shaded by big tree and frequented by cattle — a short distance from houses. Water very muddy and polluted by cow-dung. Close to shore, in shaded portion among fallen leaves, numerous larvae — pale dirty grey, short tubed. Also a long-tubed form, quite rare, and one larva of Xanthinosoma was taken.

334 a - 3, 3a, 3b, 3c. - pup. 10 Sep. a.m.
334 3d - no skin - exp. 9 Sep.
334 3e - " " " " 10 "
334 3f - " " " " 11 "
334 3g, 3h, 3i, - pup. 11 Sep. a.m.
334 e, f, i, j, w, y, - exp. 11 Sep. noon.
334 a, b, d, l, m, o, q, t, 3, 3c, - exp, 11 Sep. p.m.
334 3j, 3k, 3l. - pup. 12 Sep. am. — 334 3l - exp. 14 Sep. a.m.
334 c, d, g, n, p, u, v, s, x, 3a - exp. 12 Sep. a.m.
334 3g*, 3k, - exp. 13 Sep. a.m. —"
334 3m, 3n, - pup. " " " " — ex. p. 14 " p.m.
334 3o - no skins, exp. 14 Sep.
334 3p — 3r - pup. 15 Sep. a.m.
334 3r. (no skin) " " " " " - exp. 16 " noon.
334 3s, 3t, 3f. - exp. 16 " p.m. (334 3s - imago lost).
334 3u, 3v* — " " 17 " a.m.
334 3a — " " 18 " —

334 h, k, r, 3b - died.
334 3h, 3i. "

= Brachydeutera argentata Walk.

334 3j - died in pupa
334 3q - " " —.

*Culex proclamator D. & K.
Culex coronator D. & K.
Culex corniger Theob.

"Las Loras" near Puntarenas, Costa Rica. 9 Sep. '05.

Near house, tree with hollow formed by division of trunk, Contained a gallon or two of water and much rubbish — wood, dead leaves &c — few larvae. Two forms were distinguished — a dark, short-tubed form and a smaller, long-tubed light brown form.

335a - no skins, exp. 11 Sep.
335c - " " " " 13 "
335b - pup. 13 Sep. a.m. - ex " 15 " a.m.
335d - " 14 " " " — died.

Neighborhood of Aranjuez River near
Puntarenas, Costa Rica. 12 Sep. 05.

Exceedingly swampy region. The only larvae found were Deinocerites in a large crab hole in the mud. The imagoes were sitting upon the sides of the hole. When alarmed they flew out and alighted close by and soon returned into the hole. They will not bite or even alight upon the person. The mosquitoes were infested with minute orange-red mites. The larvae were excessively numerous — about 200 were dipped out of the hole — (of all sizes) and quite a number still remained.

A number of other crab-holes were found and most of them contained the mosquitoes. The following day more crab-holes were observed on the opposite side of the river, and altho they were slanting and too deep to look for larvae, the mosquitoes were very abundant in most of them. A small Aedomia (?) larva and some very minute Ostracoans were with the larvae.

Deceptions

336a - imagoes caught in crab-hole, Sep. 12. 05.

336b - captured pupa, ex 15 Sep. a.m.

336c - imagoes from crab-hole - on opposite side of Aranjuez River - 15 Sep. 05.
The imagoes swarm around the holes towards evening.

21 Sep. Larvae survived after bottle had been tightly corked for over three days.

336d - pup. 22 Sep. a.m. — died in pupa.
336e - " 24 " " " — ex p. 27 Sep. a.m.

Rio Aranjuez near
Puntarenas, Costa Rica. 12 Sep. 05.

Old stream-bed, full of water but not connected with River. Contained small fish etc. Among weeds in shallow water a very small larva, of Culex territans type — Brown; head + thorax very large; body slender; breathing tube long and very slender. The larvae rest upon the bottom and sides of glass back down.
By persistent work quite a few of the larvae were secured. They occured only among the weeds.

~~Pharyngtamorm~~

337a - Many had pupated 14 Sep. — ex ♀. 16 Sep.
a number died in pupa - others got "waterspranled".
Remaining larvae preserved.

Megarhinus nuretezuma. Bancroftia fascipes. 338.

Rio Aranjuez near
Puntarenas, Costa Rica, 13 Sep. 05.

Pathway to "Las Loras". In a place where there were some very large trees and the ground covered with herbage and low shrubbery. Upon some low bushes a couple of ♂ Megarhinus were discovered and easily captured. Three more were seen close
338a by, altogether six, and after some efforts all captured. They would fly but a very short distance and alight upon another leaf — usually near the tip.
Two of them that were frightened away returned to the same bush after a short time and soon could be found away from the spot where they were first seen. There were no ♀. A search for breeding place was without success. In this search some
338b mosquitos were disturbed from their hiding place, a crevice in the trunk of a large tree. They alighted upon the bark close by and were easily captured. There were 3 ♂ + 3 ♀. About 10 ft. up was a hollow which had recently contained water. The ♀s had greatly distended abdomens.

Megarhinus in flying makes a shrill fifing sound.

15 Sep. Visited same locality again, in heavy rain. When rain diminished two ♂ Megarhinus appeared upon the same bush
338c and were captured, shortly after a ♀ upon the side of tree trunk close by. A thorough search upon the ground, surrounding herbage and trees was fruitless.

338d. The tree where 338b were found was again examined and more of the same species found. 3 ♂ + 1 ♀ were captured. They were much ~~shyer~~ more shy, owing, probably, to weak light and they were very difficult to see upon the bark.

Río Aranjuez near
Puntarenas, Costa Rica 13 Sep. '05.

Pathway to "Las Loras". Shell of large tree (Papaturro del monte) that had been burned. Hole inside at level of ground contained water and mosquito larvae. Most common a rather large larva in appearance very much like our Culex territans. Two larvae, dark and with short tubes, disappeared before they were isolated — probably pupated. There are also some small, light-colored larvae with shorter and stouter tubes than the territans form. Water not discolored by decaying wood.

339a — no skins, ex p. 15 Sep.
339b — " " " " 17 "
339c " " " " 18 "
339d — pup. 22 Sep. a.m. — ex p. 25 Sep. a.m.
339e — " ex p. 30 Oct.

Rio Aranjuez near
Puntarenas, Costa Rica. 13 Sep. 05.

Trail to "Las Loras". Very large tree ("higeron") with root braces. Hole in root-brace contained ~~dark~~ water full of rubbish. Mosquito larvae of two forms. One dark and Stegomyia-like, the other smaller, light brown and resembling Culex tarsalis.

340a – no skins, exp. 15 Sep.
340b – " " " 17 "
340c – emp. 25 Sep. a.m. – exp. 28 Sep. a.m.

San José, Costa Rica. 21 Sep. '05.

Suburb of San Pedro — main road leading out. On higher, unused (unpaved) portion of road, a large muddy puddle — contained larvae of various sizes, numerous pupae and egg-boats of a Culex — resembling fatigans and territans larvae - pale, tube long and slender.

341a-c - pup. 22 Sep. a.m.
341e, f, g, - " 24 " " " - ex p. 26 Sep.
341d " 22 " p.m. - ex p. 24, a.m.
341a, c, - ex p. 23 " " "
341b — " " 24 " a.m.
341h - no skins, ex p. 23 Sep.
341i, j, - pup. 25 Sep. a.m. (died in pupa)
341k - pup. 27 or 26 Sep. - ex p. 29 Sep. a.m.

San José', Costa Rica. 21 Sep. '05.

Suburb of San Pedro. Near location of* 341. Grassy lane off main road. Standing water among grass — contained many small larvae, mostly a dark form — breathing tube dark, rather short, very stout, tapering; tracheae broad; head dark, round; antennae small; gills long.

Another form, of which only a few were taken, is pale and resembles tenuitans larvae. In another similar puddle the same kind of larvae were found and also one small Anopheles.

342a — no skin, ex f. 15 Oct.
342b " " " " 17 "

San José', Costa Rica. 21 Sep. '05.

Suburb of San Pedro. Shed for slaughtering animals. Barrel of very clear water contained numerous Culex larvae – the majority apparently fatigans and also a form with long slender tube.

343a – 5 skins, 5 pupae. 22 Sep. a.m. – exp. 24 Sep. a.m.
343b – 10 " 10 " " " " noon. " " " " (grained)
343c – 2 " 2 " " " " 3 p.m. " " " "
343d – 2 " 2 " " " " 5 " " " " 25 " a.m.
343e–r – pup. 23 Sep. a.m. – exp. 25 Sep. a.m. (343q died)
343s–w – " " " p.m.
343w, x, – " 24 " a.m. – exp. 25 Sep. p.m.
343y, – " 24 " noon. – ex " 26 " —
343s, v, w, – exp. 25 " a.m. (343z – died)
343y – pup. ? – exp. 27 Sep. a.m.
343ya – pup. 27 Sep. a.m. – exp. 27 Sep. p.m.
343yb – " 28 " (no skin) – died.

Puerto Limon, Costa Rica, 25 Sep. 05.

Neglected cacao-orchard on hilly ground back of town. Found many large crab-holes, mostly of considerable depth to reach water-level. In most holes mosquitoes were present in numbers - apparently a species of Culex - both sexes. When frightened they would come forth but remain near the hole and finally return into it. They showed no inclination to bite or even to alight on the person. - One hole was opened to ~~the~~ reach the water and some larvae were secured. Some of these were Deinocerites but the larger part a larva like that of Culex salinarius with very long and slender breath.-tube. Tracheae narrow; gills very short. Color pale yellowish, antennae entirely dark.

30 Sep. Larvae were not doing well, so visited same locality again and opened several holes with spade. Very difficult work on acc. of tenacity of clay soil and interfering roots. Sethe imagoes were swarming in the holes but very few larvae were obtained.

344♂ - Imp. 30 Oct. a.m. - ex 6 Oct.

344♀ - Captured at crab-holes, 24 Sept.

Culex exhibicalsus D.V.K

Puerto Limon, Costa Rica 25 Sep.' 05.

Back of town – side-hill small pasture – swampy – cattle-tracks filled with water. Some of the tracks contain numerous larvae, in all stages, – eggs, pupae and pupae. Larvae are very similar to Culex in *344 but have pale antennae tipped with dark.

345a – no skins, exp. 28 Sep.
345b – " " " " 29 "

Zent, 20 miles from Limon,
Costa Rica. 26 Sep. '05.

Swampy banana-land a short distance from station — bed of small stream, nearly entirely choked by rank grass and with standing water. Larvae, ~~do~~ less than half grown, among grass and rubbish, in moderate numbers.

Larvae are dark — breath.-tube short and stout, swollen at middle, black — tracheae dark, very broad — giles apparently absent; anal hairs very short.

Also one larva of Xanthinosoma. — 28 Sep. This last is growing much faster than the others.

Farther on, a small water-hole among the grass, the same dark larvae were found in small numbers and of about the same size as the others.

Zent, 20 miles from Puerto Limon, Costa Rica. 26 Sep. 05.

Shallow weed-grown ditch along railroad tracks. Contained full grown larvae in small numbers. Apparently the same as ✻346, but all pupated before they were examined. Also one full grown Xanthinosoma larva (347g). Also egg-boats and a few small long-tubed larvae.

347a–d – pup. 27 Sep. a.m.
347e–g – " 28 " " "
347a–e, g, – exp. 29 " larvae "
347h – pup. 27 Sep. a.m. (not isolated – skins sub ✻347)
" exp. 28 Sep. + 29 Sep. a.m.
347f, " " 29 " p.m.
347i – pup. 30 " a.m. – exp. ~~30 Sep~~ 1 Oct.

Zent, 20 miles from Puerto Limon, Costa Rica. 26 Sep. 05.

Hollow in stump of banana-tree, contained dark brown liquid. A few larvae of a long-tubed form and some pupae. Larvae all died in transit.

348a – no skins, exp. 27 Sep.
348b – " " " " 28 "
348c – " " " " 30 " a.m. (pupal skin preserved)
348d – " " " " " " " " " "
348e – " " " " 1 Oct.

Near Zent, Puerto Limon, Costa Rica. 26 Sep. '05.

Banana plantation "Baltimore". Boat at river-side containing much rain-water. - Numerous larvae, pupae and egg-boats gathered along sides. Larvae are mostly a pipiens-like form, - also few with long slender tubes.

349 a - no skins, ex p. 27 Sep.
349 b - pup. 27 Sep. p.m.
349 c - k — " 28 " a.m.
349 l, m " " " p.m.
349 n, o, " 29 " a.m. — ~~ex p. 30 Sep. 1 Oct.~~
349 ~~k~~ b, ~~ex~~ p. " " " " (349 b escaped).
349 h " " " " p.m.
349 c, d, e, f, i, j, l, - ex p. 30 Sep. a.m.
349 g, m, — " " " " p.m.
349 o — — " " 1 Oct, — 349 n died.

Puerto Limon, Costa Rica, 27 Sep. 05.

Outskirts along R.R. tracks to the west. Swamp back of cabin. Rusty sprinkling-can contained dark water and a few larvae, nearly full grown. There are two forms; one an Aedes - apparently the same as that found at Sonsonate (Salv.) in cocoa-nut husks - the other perhaps Stegomyia.

350♀ - 2 pupae, 2 skins, - 30 Sep., noon. — ex ♀ 3 Oct. a.m.
350♂ - 10 " 8 " - 1 Oct. - 3 ex ♂. 3 Oct., 1 ex ♂. 4 Oct.
350♂, ♂, pup. 2 Oct. a.m., - 350♂ " " 4 " , 350♂ - died. (ruined)
350♀, ♀, - " 3 " " " " - 350♀, ♀, ex ♀. 4 Oct.
350♀. - " 5 " — ex ♀. 6 Oct.
350♂ 5 ex ♂. 5 "

Puerto Limon, Costa Rica. 27 Sep. '05.

Along tracks to west of town. Freshly dug ditch along R.R. - mud puddles in places, contained pale long-tubed larvae and a few small larvae of Anopheles. In most places, however, there was running water and small fishes and no larvae could there be found. Many algae-grown places examined but without finding Anopheles.

351a - no skins, exp. 28 Sep.
351b, c, - pup. 29 Sep. a.m. — (351b, died in pupa.)
351d - " " " " " " (no skin) - ex 20 Oct. a.m.
351e - no skins, exp. 29 Sep. 351c " " " "
351f - pup. 30 Sep. a.m. — died.
351g - no skins, exp. 30 Sep.
351h " " 2 pup. 30 Oct. - 1 exp. 5 Oct.; 1 died.
351i Curious Aedid(?) larva - opaque white, head yellow-brown; tube very small, dark; body very elongate; stellate groups of hairs.

Died + was lost.

Puerto Limon, Costa Rica. 28 Sep. '05.

Cacao-grove about two miles west of town. Cacao husks, on ground, containing water and larvae of an Acrid, — apparently the same as the form found at Sonsonate (Salv.) in cocoa-nut husks.

352a - no skins, exp. 29 Sep.
352b - pup. 1 Oct. — died.
352c - no skin, exp. 2 Oct.

(?352)d - isolated black larva, pup. 28 Oct.
(?352)e - " pale " exp. 31 Oct.
352f - " — " " 11 Nov.
352g. " " " " 2 pup. 20 Feb., exp. 1 + 2 Mch. 06
352h pupa 1 Mch (skin burst) exp. 9 Mch.
352i " 6 " ——— exp. 15 "
352j., 2 " 12 "

Puerto Limón, Costa Rica. 30 Sep. 05.

Outskirts - Deserted house on edge of cacao-grove. Kerosene-tin half-filled with dirt and rubbish, a little water on top. Larvae and pupae of an Aedid, probably the same as the form found at Sonsonate (Salv.) in cocoa-nut husks. 10 large larvae, 7 pupae, and numerous very small larvae.

353a, b, -pup. 10 Oct. — exp. 4 Oct.
353c — " 2 " a.m.
353d - captd. pup. ex 3 Oct.
353e - no skin, exp. 5 "
353f - " " pup. - 5 "

354.

Puerto Limón, Costa Rica. 30 Sep. 05.

West of town, along R.R. — small cocoa-nut grove — among opened nuts a single husk still containing a little of moisture (third day without rain!) and larvae and pupae of large Sedid forming a dense writhing mass. When brought home most of the larvae were dead, the most pupae survived.

354 a, b, - pup. 10 ♂. — 354 b dried.

Puerto Limón, Costa Rica. 30 Sep. 05.

Cacao orchard two miles west of town. At head of small stream, between steep banks, a pool of clear spring water containing vegetable debris.

~~Many small larvae of form A~~

Many larvae of a very small Tenitæus-like form. Four pupae, extremely small, ochre yellow - Most of the larvae preserved.

355a, b, - pup. 10 Oct. - 355a exp. 3 Oct. a.m. - 355b died.
355c - 2 pupae, 2 skins, 10 Oct. - 1 exp. 3 Oct. a.m. - 1 died.
355d - 3 " 3 " - " - 1 exp. " " " " - 2 "
355e - no skins, exp. 2 Oct. (pupal skins preserved.)
355f - pup. 3 Oct. a. m. — died.

Wyeomyia vanduzeei Dyar & Knab
" antoinetta " "

Larvae from Bromelias, collected at Estero, Fla. by Junius B. VanDuzee, 22 Apr. 1906. Received through the Bureau of Entomology, 25 Apr. The larvae were shipped in homeopathic vials and more than half the larvae were dead. Of several pupae two were alive but did not produce imagos.

The larvae are of two species:—

A. Tracheal gills four, ~~moniliate~~ long. Thorax with fan shaped tufts on front margin, near angles. Latral hairs, abdom. segts 3–6 single, very long. Tube long + slender, cylindrical, nipple-like. Head hairs single.

B. Tracheal gills four, small. Latral hairs, abdom segts. 3–6 in pairs, long. Tube shorter, swollen somewhat, with many single hairs. Head hairs not single.

356.1 pupated 28 Apr., ex 4 May — specimen lost.
356.2 – 2 pupated 29 or 30 Apr. (skins lost) – ex 5 May.

Several larvae transferred to water from a wood-pool died in a very short time.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 356.2 | pup. | 1 | May, | ex | 7 (or 6?) | May. | |
| 356.3 | " | 2 | " | — | died. | | |
| 356.4 | " | 3 | " | ex | 10 | May | |
| 356.5 | " | 4 | " | " | " | " | (3 spec.) |
| 356.6 | " | 5 | " | " | 11 | " | |
| 356.7 | " | " | " | " | " | " | — |
| 356.8 | " | 8 | " | " | 14 | " | |
| 356.9 | " | " | " | " | " | " | (imago lost) |
| (2d lot) — 356.10 | " | 10 | " | " | 17 | " | |
| 356.11 | " | 9 | " | – | died. | | |

Extract from letter from Junius B. VanDuzee of Apr. 26. 1906.

"I am writing in continuation of my letter of April 22. Since that date mosquitoes have hatched out from the same Bromelia water from which the specimens of larva were taken that I sent you. I find that by inserting my finger in the breeding jar the mosquitoes therein lose no time in drawing their fill of blood, thus" &c. + +

2d lot received 10 May.

356.

Letter from Mr. Van Dyzee of 6 May 1906.

- - - "the movements of the larva from the Bromelias in general are much more refined than those of other larva with which I have come in contact. In the first place none of the Bromelia larva is so rapidly jerky as the movements of other larva; their movements are more sedate while both old and young larva float upward and downward with a graceful undulating movement and which they use much more effectively and more often than other larva. Another thing I notice is that they hang straight downward instead of horizontal or at an angle, and also that they remain in the same spot while taking air. In my breeding jars other larva are usually on the move while up for an airing."

Large bottle containing bromelia water and some larvae received 21 May.

Letter from Mr. Van Dyzee of June 1, 1906 (extract) — "Yes, the Bromelias contain larva all the year round, unless it be in the rainy season which I have yet to watch and I see no reason why they should not be productive then. I find them in the fall, winter and spring and expect to find them there in the summer. The dews are very heavy here most of the year and a dew drop immediately slides down the leaf into the cup as soon as it strikes the Bromelia leaf. The other inhabitants of the Bromelia are very numerous.

356.12 — 2 pupae 6 June — 1 ex 11 June.
356.13 — 3 " (2 dead) 7 June — 1 ex 12 June (waterspraved)
356.14 — 1 " 16 June — ex 21 June (escaped - pushed by cotton plug)
356.15 — 1 " " " " " " "
356.16 — " 17 June (not isolated) — ex 23 June (waterspraved).
356.17 — 3 " 21+22 " (all died in pupa)
356.18 — 1 " 24 or 25 " (skins not surely associated) — died
356.19 — 1 " " " " " " — ex 28 June.
356.20 — 1 " 28 June — ex. 4 or 5 July (waterspraved)
356.21 — 1 " 5 July — died in pupa.

Lot from swamps east of Springfield, Mass. collected by Dr. Geo. Dimmock; mailed 17 May, received 18 May. Swamps reported drying up and few larvae to be found. Of the small lot received most were pupae. A few larvae of Fitchii, atropalpus and dyari – this last in 3d stage.

A second lot, from another swamp in same region, was mailed 21 May p.m. and received 23 May a.m. The large larvae in this lot were all fitchii. 8 of them had pupated in transit, their skins showed to be all the same species. There were also 2 small larvae of Anopheles and one Culex territans, last stage.

358.1 – 5 imagos emerged 25 + 26 May from the 8 pupae, others were dead. Specimens more or less waterspranked.

358.2 – pup. 23 May p.m. – ex 27 May (waterspranked)
358.3 – " 24 " " " " " "
358.4 – " 25 " a.m. " " " "
358.5 – " " " " – died
358.6 – " " " " "
358.7 – " " " " "
territans – 358.8 – " 27 or 28 May – ex 30 May (waterspranked)

Psychodidae.

Among a shipment of Wyeomyia larvae from Bromelias collected by Junius B. Van Duzee, 22 Apr. 1906, at Estero, Fla. were several Psychodid larvae and a pupa. All were dead. The larvae are cylindrical flattened; the head and caudal extremity are both bluntly conical, similar in appearance. The body segments bear transverse dark plates. The pupa resembles that of Culex and is free-swimming, without doubt.

Upon further correspondence the following was received in a letter of June 1st from Mr. Van Duzee.

"I have succeeded in separating all of the Psychodid larva I have on hand at present from the Wyeomyia and have placed them in the small bottle you returned to me in place of the vials, as I find it better suited for watching them than in the large jars. I have from two to three dozen on hand but no pupae at present. Unless your previous experience has proved to the contrary I believe that they would stand the journey to Washington all right. I am quite convinced that the larva which your department received from me before was dead before it left here or rather at the time I bottled them, for the reason that I dipped the Wyeomyia larva out of the breeding jar with a spoon and did not go to the bottom or sides of the jar.

I find that the Psychodid crawl on the bottom and up the sides to the surface where, if they do not happen to fall back, they remain for some time suspended by their tail, wriggleing about and sometimes crawling on the under surface of the water for a short distance from the edge of the jar. In crawling on the bottom they do not use the latter half of their bodies but move by a hitching motion with the upper portion. They remain under water much longer than the mosquito larva and also live ~~much longer~~ on the sides of the jar after the water has been poured out, much

longer than the mosquito larva. In separating the Psychodid larva from the others I examined the water spoonful by spoonful until the jar was emptied and found very little larva. Just at this juncture I was called away for nearly half an hour and when I returned I found that by washing the sides and bottom of the jar with only a spoonful of water at a time that I secured the major ~~part~~ portion of the larva, ~~that I had recovered, in the~~ all of them alive, while some of the Wyeomyia larva that had remained in the same condition not nearly so long were dead.

No. 400.-1

Osborn, Saskatchewan. 16 May 1907.

Pools along R.R. tracks east of town contained larvae. A deep hole, a yard square, contained a number, small and larger ones, apparently all in second stage. They are dark colored. A shallow ditch beyond contained larvae, also in second stage, but they were very few and kept close in shore among the grass-tufts and rubbish. These larvae moulted for the greater part during the following day, but a number are still very small - others appear to have reached the 4th stage on May 18. Those from the shallow ditch have developed more rapidly. Another deeper pool, farther on was examined 17 May and found to contain numerous larvae, still in the 2d stage. All the larvae appear to belong to one species. On May 6 some water beetles were captured from this last pool and put in alcohol. Among them was a mosquito-larva in the first stage. There was a cold wind blowing at the time and the water was freezing around projecting objects. The weather continued cold with heavy freezing at night until the 11th - the 12th was cold with heavy freeze at night.

18 May. High wind. Drove out, two miles north of town, and examined many of the pools and ponds scattered over the prairie. The larger ponds contained no larvae, some of the small pools half-grown and small larvae. The species are the same as those found along R.R. tracks.

19 May '07. Examined pools along R.R. to the eastward again. One ditch, choked with sedges, the water very shallow and warm, contained larvae mostly in last stage. They were all the same species, the common one. This form appears to be new. — two detached proctan-teeth, head-hairs single. A second species occurs rarely in some of the pools and appears to be fitchii - Those are few and small and develop slowly - the common species grows rapidly. In the deeper pools the larvae are smaller, the water colder. In the larger pools the larvae are scarce or altogether absent — which is also the case with some of the smaller pools.

The following are from shallow sedge-ditch —

400.1 pupa 21 May 7 p.m.
400.2 -.3 -.4 -.5 -.6 -.7 -.8 -.9 - pupa 22 May a.m.
400.10 - pupa 22 May 1 p.m.
400.11 - " " " 3 - "
400.12 " " " 4 " "
400.13 -.14 -.15 -.16 - pupa 23 May 9 a.m.
400.17 -.18 ——— " " " 1 p.m.
400.19 -.20 -.21 - " " " 7.30 p.m.
400.22 -.23 ——— " 24 " noon.
400.24 ——— " " " 3.30 p.m.
400.27 ——— " 25 " a.m.

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24 May. The shallow ditch from which the above larvae were obtained is dry. The other ditches are shrinking rapidly. A ditch which contained mostly 2d + 3d stage larvae on the 19th now has mostly full grown ones and a few pupae. The fitchii are now in the 3d stage.

400.25 - pupa 24 May 9 p.m.
400.26 - " 25 " a.m (2 spec.)

Ex fusfa 25 May 12 m. - 400.8 ; 6 p.m. - 400.2 ; 7 p.m. - 400.3, -.6.
" " " " 11 p.m. - 400.5
" " 26 " a.m. - 400.4 - .7 - .9 - .10 - .11

400.28 fusfa 25 May 1 p.m. (2 sfera) - ex f. 28 May 9 p.m.
400.29 " 26 " a.m. — ex f. 30 May a.m.
400.30 " " " " — ex f. 29 May, 12 m.
400.31 " " " 11.50 " — " " " " 6 p.m.
400.32 " " " 12.45 p.m. " 30 " a.m.
400.33 " " " 1.30 " — " " 29 " 7 p.m.
Ex fusfa 400.14, -15, -16 (contiguous) - 6 p.m. 26 May.
400.34 fusfa 26 May 6 p.m. - ex f. 29 May 10 p.m.
400.35 " " " " — " " 30 " a.m.
400.36 " " " 8 " — " " " " "

Ex fusfa 27 May a.m. - 400.18
" " " " —— 400.17, -.19, -.20, -.21, -.22.
400.37 -.38 fusfa 27 May - 400.37 ex f. 31 May a.m.
Ex fusfa 28 May a.m. - 400.23 -.25 -.26 ; 2 p.m. - 400.24.
400.39 fusfa 28 May 11 a.m. -
400.40 " 30 " —— ex f. 3 June, a.m.
400.41 (filehii) - fusfa 3 June, a.m. - ex f. 8 June a.m.
400.42 " — " 6 " 7 p.m. - " - 11 " " "

Diel in fusfa - 400.1, -.12, -.13, -.27, -.38, -.39.

No. 401.

Oxbow, Saskatchewan. 16 May 1907.

Shallow puddle in field just west of R.R. station. The water was shallow and felt warm to the touch. Mosquito larvae were numerous along shore among the grass and rubbish. Most of them were already in the third stage and the following day reached the 4th. Those captured from the same pool the evening of the 17th and morning of the 18th were mostly in the last stage. There was ice formed during the night and a cold violent wind prevailed the 17 + 18.

401.1 pupated 18 May 1.30 p.m. —
401.2, -3, -4, -5, pup. 18 May, up to 7.45 p.m.

All that have pupated so far are from the first lot brought indoors.

401.6 -.7 -.8 -.9 -.10 pupa 19 May a.m.
401.11 -.12 -.13 " " " 2 p.m.
401.14 -.15 -.16 — " " " 8 " -
401.17 -.18 -.19 -.20 -.21 -.22 -.23 -.24 -.25 -.26 pupa 20 May a.m.
401.27 -.28 -.29 · pupa 20 May, 11 a.m.
401.30 · pupa 20 May 1 p.m.
401.31 " " 2 " "
401.32 " " " 8 " "
401.33 -.34 -.35 -.36 pupa 21 May a.m.
401.37 -.38 -.39 — " " " 3 p.m.
401.40 ———— " " " 7 " -
401.41 -.42 -.43 — " 22 " a.m.
401.44 ———— " " " 1 p.m.

Exc pupa 22 May:— 2 p.m.- 401.1, 401.3 ; -3 p.m- 401.2 ; -4 p.m.- 401.5 ; 5 p.m- 401.4.
401.45 -.46 - pupa 22 May 4 p.m.

Died in pupa = 401.8 -.6 -.12 -.41 -.23 -.45 -.49 -.44 -.47 -.15

401.47 - 48 [illegible] 22 May 5 p.m.

Ex [illegible] - 23 May, 9 a.m. - 401.7, -.9, -.10, -.14; - 11 a.m. - 401.13 -

401.49 [illegible] 23 " " "

401.50 " " " 12 m. - ex p.? 28 May a.m. (untranslated)

401.11, -.16, -.19, ex p. 23 May 1 p.m.; 401.31 - 4 p.m.

Ex [illegible] - 24 May a.m. - 401.17, -.18, -.20, -.21, -.22, -.23, -.24, -.25, -.26, -.27 -.28, 401.29, -.30; 12 m. - 401.32, -.46; 7 p.m. - 401.36.

" " " 9.45 p.m. - 401.35.

" 25 May a.m. 401.37 -.38 -.39 -.40; 10 a.m. - 401.34 -.33.

" " " 1 p.m. 401.42; 3.30 - 401.43,

" 26 " a.m. - 401.48

401.51 [illegible] 26 May a.m. — ex p. 30 May a.m.

No. 402

3 Miles to West along R.R.-

Osborn, Sask. 21 May 1907. On west side of stream, on bottom land sloping to stream, a pool with tussocks and surrounded by bushes. Mosquito larvae abundant among rubbish. The largest larvae are the common form - two detatched teeth in pecten. There are also a few fitchii. By far the most abundant is a ~~small~~ species with continuous pecten, head-hairs single, lateral abd. hairs double. They are still small, some very small, mostly in second stage. They look very dark and the chitinous parts are nearly black. They move along the bottom with rapid side switching of the body, much like trivittatus.

24 May. Many of the new larvae are now in the last stage and the colors are lighter - the chitinous parts ferruginous yellow.

402.1, -.2 - pupa 29 May a.m.
402.3, -.4, - " " " 3 p.m.
402.5 —— " " " 7 " - ex p. 3 June 4 p.m.
402.6, -.7, -.8, -.9, - pupa 30 May, a.m. - ex p. 4 June a.m.
402.10, -.11, -.12, -.13, - " 31 " " "
402.14 —————— " " " 1 p.m.

30 May. Visited same pool again. There are now full-grown larvae and pupae, but most numerous are small larvae in first and second stage. The full grown larvae belong almost wholly to the above mentioned form with continuous pecten. The catch contained only one larva of the previously common form, and one each of fitchii and ~~fitchii~~ (last stage). Mosquitoes were flying about.

402.15 - (4 pupae, 3 skins) 1 June a.m. - 1 exp. 5 June 4.30 p.m.; 3 exp. 6 June a.m.
402.16 - pupa 1 June a.m. — exp. 5 June 7 p.m.
402.17 - " " " " " — " 6 " a.m.
402+ pupae captured 30 May
402+1 exp. 31 May.
402+2 " " 1 June p.m. — 402+3 exp. 5 June a.m.
402.18 -.19 -.20 -.21 -.22 -.23 pupa 1 June 7 p.m.
Ex pupa 2 June a.m. - 402.1; 2 p.m. - 402.4.
402.24 -.25 -.26 -.27 -.28 -.29 -.30 pupa 2 June a.m.
402.31, -.32 — pupa 2 June 4 p.m.
Ex pupa 3 June a.m. — 402.2, -.3, ; 5 June a.m. - 402.14; 1 p.m. - 402.12
402.33 -.34 -.35 -.36 - pupa 3 June a.m.
402.37 -.38 —— " " " 1 p.m.
402.39 (?albifrichii) " 5 " a.m. — exp. 9 June, 3 p.m.

407. 5 June. Visited same ditch and deeper hole again. The reeds and watersnails indicate that they are permanent. There were only larvae in last stage, but no pupae. The water in the hole was rather cold. Larvae of three species were found in it. The black-headed form mentioned above, curriei (same as *402), and the albifrichii form — the latter are now mostly very large but not yet ready for pupation. The ditch contained only this last form.

402.40 -.41 - pupa 5 June 8 p.m.
402.19 - exp. 5 June 4 p.m.
Ex pupa 6 June, a.m. - 402.22, -.23; 10 a.m. - 402.18; 10.45 a.m. - 402.20, -.21.
402.42 -.43 -.44 - pupa 6 June a.m. - exp. 10 June a.m.
Ex pupa #6 June, 2 p.m. - 402.28; 5 p.m. - 402.26; 6 p.m. — 402.24.
" " " " 10 " - 402.32. 7 " " 402.25
" " 7 " a.m. — 402.27 -.31 -.33; 12 m. - 402.35 -.36.
402.45 from slough on bottom land east of R.R. bridge - pupa 7 June a.m.
402.46 " " " " " " " " 8 " "
Ex pupa 8 June a.m. - 402.37; 9 June 3 p.m. - 402.40; 6 p.m. - 402.41.
" " 11 " " " 402.45; p.m. - 402.46.
402.47 pupa 17 June a.m.

Died in pupa — 402.10 -.11 -.13 -.29 -.30 -.34.

No. 403.

Oxbow, Saskatchewan. 25 May 1907. Ditches along R.R. to east of town. Fitchii and a nearly related form are to appearing in numbers. In a small reedy ditch these were mixed with previously common form, which, indeed, is still the predominating form. In a small reedy pond only the fitchii and new form were found. The new one differs from fitchii by the shorter, stouter tube and double lateral hairs - the dorsal hairs are not developed as in fitchii, altho the ventral ones are long on segts 2-5. Head-hairs double. The chitinous parts are deep brown (3d stage). These larvae are as yet in the second and third stages and appear to grow slowly.

28 May. Fitchii, in last stage, now have narrow, angulate tracheae - before had broad ones. One of the other species is now in last stage. It shows detached teeth in pecten and resembles ab fitchii, - in the third stage there is sometimes a single detatched tooth, but not conspicuous.

29 May. A number of the 3 ab fitchii are now in last stage.

403.1 pupa 8 June a.m. — died -

No. 404.

Carnduff, Saskatchewan. 27 May 1907.
Shallow puddle on open prairie north of town.
The prairie is very dry - traces of former puddles
scattered about, but already quite dry. This puddle
contained numerous larvae of the common form (pecten
with 2 detatched teeth, head-hairs single) and many pupae.
Most of the larvae were in the last stage but there were
some in 2d + 3d stages. Besides the common species
there were a few small larvae of fitchii.

404.1 pupa 28 May. 12 m. (3 spec.)
404.2 " 28 " 3 p.m. —— ex p. 1 June a.m.

404.1 - 1 specimen ex 28 31 May 4 p.m. (♀)
" 2 " " 1 June a.m.
404.+ captured pupae, ex 31 May

No. 405.

Carnduff, Saskatchewan. 27 May 1907.
Ditch beside R.R. track with traces of alkali deposit on the bank. A few larvae of the common form, pupae scarce. The most numerous larvae of size are a form in third stage, which seems to answer to abfitchii. They are very shy and remain below a long time and by watching patiently they could be discovered on the bottom. There are numerous small larvae (2nd stage) which come up frequently. Their chitinous parts are blacks and they may possibly be the young form of the abfitchii. Caddis-worms were numerous in this ditch.

28 May. Eight of the abfitchii are now in last stage.

405.1 pupa 28 May 12 m. — exp. 1 June a.m.

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A pond west of the town contained these same abfitchii larvae sparingly. This pond appears to be permanent, for it contained numerous water-snails and at the end cat-tail flags. This pond showed a distinct deposit of alkali along the margin.

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405+, from captured pupae, issued 28 May.

7 June. Some of the small larvae are now in last stage and prove to be currieii, the large larvae do not thrive.

No. 406.

Carnduff, Saskatchewan. 27 May 1907.
Roadside ditch, west of town, with trace of alkali along margin. Contained larvae and pupae of the commonest species. Also larvae of abfitchii in third stage. Numerous small, very black larvae - possibly young abfitchii. No fitchii.

406.1 - pupa 28 May 12 m. - ex p. 1 June a.m. (water sprayed) 7 June. Some of the small black larvae are now in last stage and they are curriei.

406.2 pupa 11 June p.m. — ex p. 14 June p.m.
406.3 " 12 " a.m. — " 15 " a.m.

No. 407.

Oxbow, Saskatchewan. 30 May 1907.

Ditch beside R.R., two miles west of town. Filled with reeds, which seems to indicate that it is permanent. Large larvae in last stage proved to belong to the ?abfitchii form. The detached teeth of the pecten are poorly pronounced or absent.

At one end of the ditch is a deep hole in which there is a luxurious growth of algae. Dark larvae were noticed coming to the top in the clear spaces. They are a form not found before. Chitinous parts very dark, pecten uninterrupted, head hairs 8-3-8+, lateral abd. hairs 4-2-2-2-2-1. On 31 May several of these larvae show by the large eyes that they are about to pupate.

407.1 -.2 -.3 - pupa 3 June, a.m.
407.4 ——— " " " 7 p.m. — ex p. 8 June, a.m.
407.5 -.6 -.7 — " 4 " a.m. — " " " " "
407.8 ——— " " " 7 p.m. — " " " " 5 p.m.
407.9 -.10 -.11 " 5 " a.m. — .10 -.11 ex p. 9 June 3 p.m.
407.12 -.13 -.14 " 6 " " "
407.15 -.16 — " " " 1 p.m. — ex p. 10 June, 2 p.m.
407.17 ——— " " " 7 " " — " " 11 " a.m.
407.18 -.19 -.20 -.21 -.22 " 7 " a.m.

Ex pupa 7 June, a.m. - 407.1 -.2; 2.30 p.m. - 407.3; 10 June a.m. - 407.13-.14.

~~407.23 pupa 7 June, east of R.R. bridge~~

407.24 - pupa 7 June 1 p.m.
407.25 " 8 " a.m.
407.26-.27 — " " 5 p.m.
407.28 -.29 -.30 - 9 " a.m.
407.31 -.32 — " " " 1 p.m.
407.33 ——— " " " 1.40 " — ex p. 14 June, a.m.
407.34 — " " " 3. " "
407.35 — " " " 8 " " ———————
407.36 — " 10 " a.m. — ex p. 13 June a.m.
407.37 — " " " 6.30 p.m. — " " 14 " 4 p.m.

Died in pupa - 407.9, -.12, -.25, -24, -.39, -.35, -.41, -.45 -.40 -.43 -.78

10 June. Visited hole and ditch again. The rain of two nights ago has raised the water in the ditches nearly to the original level. Larvae are now getting scarce. In the hole I found only larvae of the large species (?fletcheri) and one pupa of the same. In a ditch opposite this same form occured, all in last stage, and two fitchii and one curriei larva were taken. There were quite a number of smaller pupae. One small larva appears to be Aedes pseudes.

407.38 pupa 10 June 10 p.m. — died.

Ex pupa 11 June, a.m. — 407.20 -.21 -.22; 11 a.m. - 407.19; p.m. - 407.18 -.26.

407.39 -.40 -.41 -.42 -.43 - pupa 11 June a.m.

407.44 - pupa 11 June 10 a.m. — ex p. 16 June
407.45 " " " 12.30 p.m.
407.46 " " " 4. " " — ex p. 15 June, p.m.
407.47 " " " 7 " " — " 16 "
407.48 " 12 " a.m. " " "
407.49 " " " 10 " " — ex p. 16 "
407.50 (2 spec.) " " " 1 p.m. — " " " "
407.51 — " " " " " — " " " "
407.52 — " " " 2 " " — " " " "
407.53 — " " " " " — " " " "

Ex pupa 12 June, a.m. - 407.27; 2 p.m. - 407.29 -.30; p.m. - 407.28

407.54 pupa 12 June 2.45 p.m. — ex p. 16 June
407.55 " " " 7 " " " 17 " a.m.
407.56 (2 spec) " " " " — " " 16 June
407.57 " " " " " — " " 17 " a.m.
407.58 —— " " 10 " — " " " " " "
407.59 -.60 -.61 -.62 - pupa 13 June a.m. " " " " ——
407.63 (6 spec.) — " " " " — ex p. 17 June.
407.64 (4 spec.) — " " " " — " " " "
407.65 (3 spec) — " " " " " " " "

407.66 -.67 jumps 13 June, 10 a.m. - exp. 17 June -
407.68 —— " " " 11.30 " " - exp. " "
407.69 -.70 - " " " 1 p.m.
407.71 -.72 — " " " 4 " " - exp. 18 June a.m.
407.73 " " " 5 " " — " " " " "
Ex jumps 13 June, 1 p.m. - 407.32; 4 p.m. - 407.26. - 14 June a.m. - 407.31
407.74 - jumps 13 June, 8 p.m. - exp. 18 June a.m.
407.75 -.76 - " " " 11 " "
407.77 - .78 " 14 " a.m.
407.79 (4 specs) " " " " " - exp. 18 June

13 June. Visited the same ditches again. Larvae are now scarce, all full grown fletcheri - Pupae are numerous, small and large.

407 a - captured pupae, issued 14 June.
407.80 jumps 14 June 1 p.m. - exp. 18 June p.m.
407.81 " " " 1.30 " — " " " "
407.82 " " " 4 " — " 19 " a.m.
Ex jumps 14 June, 4 p.m. - 407.42, 17 June - 407.70; 18 June a.m. - 407.69.
" " 18 " 11 a.m. - 407.76,
407.83 jumps 14 June 5 p.m. — died
407.84 " 15 " ~~8~~ a.m. — "
407.85 " " " — exp. 19 June a.m.
407.86 " " " "
407.87 " 14 " 6 p.m. — died.
407.88 " 15 " 5 " -
407.89 " 16 " a.m.

Died in jumps - 407.75 -

No. 408.

Oxbow, Saskatchewan. 5 June 1907.

A warm day, following four days of cold, cloudy weather. Mosquitoes troublesome, all belonging to one species - Aedes spencerii. When the wind is not strong they are very annoying. On a rise of ground, west of the town, the highest part of the
408a prairie a swarm gathered about me which proved to be males. They emitted a high piping noise and behaved much like the swarming males of Culex pipiens. Their movements appeared to be more ~~backward~~ forward and backward and sidewise. There was a slight breeze from the south and they all headed in that direction. Soon a gust came from the west and scattered them towards the ground. This was at 10.45 a.m. They gathered again as soon as the wind decreased. They kept above my head and mostly on the side from the wind but owing to the bright light could not be watched for any length of time. If copulation took place it was not observed. The swarm contained about 50, all males. Females were flying about and biting at the time. Upon returning at 12.45 the males were seen again, altho their movements were much interfered with by the wind.

408b At 5.30 p.m. another swarm was observed in the upper part of a ravine, where the slopes are gentle. There were about 50 males, going through rapid evolutions - the mosquitoes darting forward and upward, and then dropping back. Disturbance by the wind caused more rapid flight and

sudden gusts caused them to fly to the ground. They faced about with shifting currents of wind. Several pair were seen flying off in copula. In one case the ♀ was seen approaching the swarm from beneath. Upon sitting down, near boys, a smaller swarm began to form about my head. Distant noises, or a movement on my part, caused the swarm to scatter momentarily, to return immediately. Farther down the ravine was a second swarm, about half way up the slope, and like the other, at the margin of the shrubbery filling the bottom of the ravine. In this case a swarm of very small black Chironomids was mixed with the lower part of the swarm.

At 6.30, in an open field in the river-valley, on the south side a swarm of males formed over my head, and following me, increased to the number of perhaps 200. They disappeared when I approached the edge of the woods. This experience was repeated soon after in another field and upon reaching the woods the swarm could be seen in the middle of the field.

9 June. Intervening cold and cloudy weather was terminated by heavy rain during the night. This afternoon was warm and sunny. Mosquitoes were abundant in the town, both sexes flying about and alighting on the sides of the buildings, the females biting to some extent. Persons and horses entering the town brought a following with them, particularly the horses. All appear

To be the one species – spenceri. At 6.30 I walked towards the river with Mr. Murray. As soon as we entered the field south of the tracks the mosquitoes began to rise out of the grass and alight upon us, altho there was a brisk breeze blowing. The mosquitoes would alight on the leeward side and a cloud followed us, keeping mostly about our legs. These clouds increased as we passed down into the valley, where the mosquitoes were very agressive.

In the valley we came upon a cloud of males on the open prairie. When we approached them two swarms formed over our heads which were influenced in the same manner by the wind as before noted. Upon a heavy gust of wind the swarm alighted in the grass and upon the subsidence of the wind immediately rose and again formed in a close mass over the head. Murray, being the larger man, attracted a much larger swarm. We thus each had two swarms about us, one of females about the lower part of our bodies, and one of males above our heads. These swarms followed us. Several copulations were noted. Upon entering a ravine, which we crossed, the males all left us and only a part of the females followed. Upon emerging on the other side a new swarm of females quickly gathered and shortly we came upon another large swarm of males which again concentrated in separate swarms above our heads. It was now seven o'clock. These swarms I judged to contain many hundred – perhaps 1000 males. When not disturbed they hovered

with the bottom of the swarm very close to the head and in close formation. These swarms followed us up the long hill and continued with us above nearly to the town – in the end being much disturbed by the wind. About seven quite a number of copulations were observed. The females appeared to approach from beneath and flew from the swarm with the male – drifting away towards the ground – the union lasting but a short time. They copulate face to face, kept well apart by their long legs, the female in the upper position, the male back downward.

10 June. Fine weather but high wind and no mosquitoes flying. I found that in standing still, however, a small number of mosquitoes came to bite and were very blood-thirsty. These rose from leeward and rose against the wind, which would seem to indicate that they were attracted by smell. Yesterday quite a number of males drifted into my room on the first floor. This indicates that the males fly higher than the females. The 2 or 3 ♀ in the room were brought in on the clothes of persons. This morning the males were all dead.

11 June. A hot day, light wind. In the afternoon went out on prairie north of town. Male mosquitoes were abundant on the blossoms of willows on the margin of several sloughs. Often there were five or six on one catkin. They only visited the catkins which were in full bloom. They climb about on the stamens

and probe down amongst them for honey. They plunge the proboscis down for a second then quickly withdraw it and re-insert it in another place, and this they keep up, all the time creeping about on the stamens. They appear very eager in this work, much like bees, and in one case even climbing over each other. The palpi are ~~bent~~ held erect, together with the antennae nearly at right angles to the proboscis. There were also a few females on the blossoms, plunging their proboscis down among the stamens in the same way, but apparently much less eager than the males. They were still at the flowers at 6.30, when I returned home. Altho, a short time ago, the principal visitors of the willow blooms were small bees – the mosquitoes now outnumber all others.

408 c - specimens captured on blooms - 11 June.

12 June. A warm day, but very windy. At the river-side I again found the mosquitoes on the willow-blooms, mostly male, and this altho the wind is very violent. When they probe down for the honey the abdomen is elevated at an angle of 45°. They do not visit any other flowers, of which there is an abundance at present.

18 June. Windy weather intervening. Males have nearly all disappeared - more at willows – only very few found by beating, a single one came to "swarm".

No. 409.

Oxbow, Saskatchewan. 7 June, 1907.

A number of deep holes - "springs" along bottom of steep-sided ravine draining to Souris River. In one of these holes small larvae were first observed on May 17 - which in the holes a little farther down, which are sheltered by bushes, there were no larvae at that time. Now, the sheltered holes particularly, are swarming with larvae in the third and fourth stage (mostly 3d) - no pupae. There are two species: one is apparently canadensis; the other has the pecten continuous, lateral abd. hairs 4-4-2-2-2-2, head hairs 8-$\frac{3}{2}$-1+. This last form predominates and when mature they are somewhat larger than the other and lighter colored.

409.1 pupa 9 June 3 p.m. - exp. 13 June a.m.
409.2 " " " 8 " " — " " 14 " " "
409.3 " " " 9 " " — " " 13 " a.m.
409.4 -.5 -.6 -.7 - pupa 10 June, a.m. - exp. -.5 -.7 - 14 June a.m.
409.8 ——— " " " 1 p.m. " - 14 June 10.30 a.m.
409.9 ——— " " " 2 " " " " " 3 p.m.
409.10 -.11 -.12 — " " " 5 " "
409.13 (3 specimens) " " " 10 " " - exp 14 June (1 waterspecked)
409.14 (4 " ) " 11 " a.m. - all died.
409.15 -.16 -.17 -.18 -.19 -.20 - pupa 11 June, a.m.
409.21 - pupa 11 June, 12 m. — exp. 15 June a.m.
409.22 - " " " p.m. — " " " "
409.25 (4 spec.) 12 " a.m. — " " " ——
409.26 -.27 - pupa " " p.m. — " 16 "
409.28 — " 13 " a.m. — " " "
409.29 — " 14 " 1 p.m. — died.
409.30 — " 14 " 12 m. — exp. 18 June.

Exp pupa 13 June, 4.30 p.m. - 409.6; 11 p.m. - 409.10 -.11;
" " 14 " a.m. - 409.12

Died in pupa - 409.4, -.19, -.13,

Ex pupa – 14 June, 4 p.m. – 409.15 ; 9 p.m. – 419.16 – .17 – .20.

409.31 – .32 pupa 15 June a.m.
409.33 — " 16 " —

14 June. Visited the well-holes again. Larvae in 2d, 3d + 4th stages and many pupae. Nearly all *canadensis* – only a very few *subcantans*.

In another ravine was a hole dug for well and near it a large vat, let down to catch spring water. In the hole were numerous larvae, mostly full grown, and many pupae – all but a few were *canadensis*, the few *subcantans*. In the vat, which still contained ice about 10 days ago the larvae (*canadensis*) are mostly small – 2d and 3d stages.

Ex pupa 18 June, 1 p.m. – 409.32

No. 410.

Oxbow, Saskatchewan. 12 June 1907.

Near lower end of one of the large ravines. A trickling stream, where earlier there was a strong flow of snow water. This stream loses itself a short distance up the ravine. At its edge cattle-tracks, filled with water, contain great numbers of larvae — a few strong ones in the running water (slow current). The larvae are mostly in 3d + 4th stage, a few in 2d. All appear to be canadensis. There were a few pupae.

410.1 -2 -3 — pupa 12 June 4 p.m. — exp. 16 June
410.4 (3 spec.) — " " " " " " "
410.5 (9 " ) — " 13. " a.m. " " "
410.6 ——— " " " 4 p.m. " " "
410.7 (~~3 spec~~) — " " " 5 " " " "
410.8 " " " " " 6 " " " "
410.9 ——— " 14 " 12 m. " 17 " 1 p.m.
410.10 ——— " " " 1 p.m. " " " "
410.11 (2 spec.) " " " 1.30 " — died.

Died in pupa - 410.2

No. 411.

Oxbow, Saskatchewan. 13 June 1907.

About 2 miles west of town. St culvert under R.R. tracks, shallow water - remains of stream of snow-water draining from opposite side. Small larvae with light bodies and dark head & tube. These for the most part appear to be Culex fuscus, also some curriei. They were in the 2d, 3d and 4th stages, and fairly numerous.

411.1 (curriei) - pupa 14 June a.m. - ex p. 17 June a.m.
411.2 (fuscus) - " " " " - ex p. 16 June

The curriei larvae, when at the top, hang nearly straight down → ; the fuscus take a nearly horizontal position — .

411.3 pupa 14 June 12 m. - ex p. 17 June, a.m.
411.4 " " " 2 p.m. " " " "
411.5 " " " 4 " " " " 12 m.
411.6 " " " 9 " " 18 " a.m.
411.7 (2 spec.) 15 " a.m. " " " "
411.8 — " " " " " " "
411.9 — " " 1 p.m. " " " p.m.
411.10 (2 spec.) " " p.m. " 19 " a.m.
411.11 — " " " - died.
411.12 — 16 " " "
411.13 — 17 " a.m.

Aedes / Stelladi

No. 412

Oxbow, Saskatchewan. 19 June, 1907.

At 8.30 p.m. noticed small swarm of ♂ mosquitoes at head of a ravine. The ground sloped gently from the prairie which at that point was 15 to 20 ft. above the bottom of the depression. The swarm was near the lowest point, very loosely organized, of perhaps 40 individuals, and spread out close to the ground. ~~In a short time~~ Close by were some thorn-bushes and between and around these were loose swarms of other Nematocera — apparently several species mixed (see specimens).

In a short time other swarms of mosquitoes began to form, along the bottom and the western slope where they were protected from the wind. These various swarms kept close to the ground and spread out and were to a certain extent connected, altho there were foci where the mosquitoes were closer together. The size of the swarms gradually increased until at 9 o'clock one swarm contained several hundred. Copulation occurred most frequently between 9.00 and 9.15, altho it was observed before that and after. At no time was the top of the swarm more than 4 ft above the ground, the diameter at least twice as much. By stooping down the swarms along the slope could be observed and they seemed to be connected by the straggling individuals. The piping noise could be distinctly heard, but was in a lower key than in

spenceri. This note varied somewhat as the swarm was disturbed by an occasional breeze.

The females apparently entered the swarm from beneath, when they were seized by one or more males. Union takes place "face to face", the pair flying obliquely upward for several yards. Then the pair would either separate promptly, or, swing out end-to-end. Then a struggle to separate took place. Each could be seen jerking violently, the pair, as a result, making no appreciable progress except to slowly rise. Sometimes the pair would fly off end-to-end. When two ♂♂ seized a ♀ the group would rise straight up, apparently in a violent struggle - one of the ♂♂ finally uniting with the ♀, or all separating. In one case 4 individuals were thus, so to speak scrambling over each other.

The swarm was watched until 9.30 when the twilight was already quite deep. ~~The 2 were~~ Single ♂♂ were leaving the swarm and copulation appeared to have ceased.

No. 413.

Culex rejector D. + K.

Cordoba, Ver. Mexico. 23 Dec. 1907.

Above village of San José', along stream where the larvae of this species were taken in 1905. On edge of steep bank, tree overhanging stream and bearing numerous parasitic plants. Large bromelias contained water and in these the larvae were found - large and small ones. Apparently no other bulicid larvae with them.

413.1 pupa 30 Dec. — died
413.2 " 4 Jan. (08) - died
413.3 " 13 " — died.
413.4 " 21 " a.m. — iss. 27 Jan. a.m.
413.5 " 26 " " —
413.6 " 2 Feb. " — 6 Feb.
413.7 " 22 " " (from another plant) - iss. 2 Mch. a.m.
413.8 - 2 sp. Chironomidae, iss. 24 Feb. - pupa skins preserved.

No. 414.

Wyeomyia
Megarhinus

Cordoba, Ver., Mexico, 23 Dec. 1907.

Same locality as #413. Small tree on hill-side which was planted with coffee. Three small bromeliaceous plants about 5 ft. from ground, contained water. Larvae apparently all one species of Wyeomyia in various stages - one pupa - Also larvae of Ceratopogon.

Pupa issued 24 Dec.

414.1 pupa 24 Dec. - iss. 2 Jan.
414.2 " 26 " — died

26 Dec. There is one very small larva of Megarhinus in this lot.

414.3 pupa 31 Dec. (skin lost) — iss. 8 Jan. a.m.
414.4 " " " p.m. — iss. 8 Jan. p.m.
414.5 - 2 pupae - no skins - 1 Jan., a.m. — iss. 10 Jan. a.m.
414.6 - pupa 1 Jan. 4 p.m. ——— " " " " "
414.7 " 3 " p.m. (skin lost) -
414.8 " 4 " noon - iss. Jan. 15, a.m.
414.9 " " " p.m. (skin lost) — died -
414.10 " 6 " " " — died.
414.11 " 11 " a.m. — died
414.12 " " " p.m. (2) — died.
414.13 " 14 " a.m. (no skin) — iss. 24 Jan. a.m.
414.14 " 16 " p.m. (2 pupae) — both died
414.15 " 19 " a.m. — died.
414.16 " " " " (no skin) — died.
414.17 " 21 " " (2 " " ) — iss. 29 Jan. p.m. (waterfrowled)
414.18 " 22 " " (no skin) — iss. 31 " a.m. - waterfrowled
414.19 " " " p.m. ( " " ) — iss. " " "
414.20 " 23 " a.m. ( " ) — died
414.21 Chironomid iss. 23 Jan. a.m. — larvae resemble Metriocnemus and live in rubbish on bottom and make no tubes - pupa in clear gelatinous secretion just above water-level. Pupa + larvae preserved sub. 414.21
414.22 pupa 27 Jan. a.m. (Megarhinus) —— died
414.23 " " " " (Wyeom. - no skin) — iss. 4 Feb. a.m.

No. 415.

Anopheles ~~argyritarsis H.D.~~
Megarhinus
Wyeomyia
Culex rejector D. & K.

Cordoba, Ver. Mexico. 23 Dec. 1907.

Same locality as # 413. farther down stream. Tree overhanging stream in shady place. Bromelia on tree near its base. Contains one larva each of Anopheles and Megarhinus, numerous larvae of Wyeomyia and a few Culex rejector. The Wyeomyia is the same as # 414. There are also Ceratopogon and other dipterous larvae.

| | | | | |
|---|---|---|---|---|
| 415.1 | pupa | (2 skins of Wyeomyia found) | 30 Dec. | — died in pupa |
| 415.2 | " | 31 Dec. | — | iss. 8 Jan. a.m. |
| 415.3 | " | 3 Jan. | a.m. | — iss. 10 Jan. a.m. |
| 415.4 | " | " | " | p.m. (2 pupae) — iss. 1 (Culex) 9 Jan.; (Wyeom.) 11 |
| 415.5 | " | 4 | " | a.m. (2 pupae, ~~1 skin~~ mixed skins) — 1 iss. 13 |
| 415.6 | " | " | " | " " (no skin — Culex rejector?) — iss. 9 Jan. |
| 415.7 | " | " | " | noon. — died. |
| 415.8 | " | " | " | p.m. — iss. 15 Jan. a.m. |
| 415.9 | " | 5 | " | a.m. — died. |
| 415.10 | " | " | " | " " (Anopheles — skin lost) — died. |
| 415.11 | " | 6 | " | 4 p.m. — iss. 16 Jan. noon — |
| 415.12 | " | " | " | p.m. — (skin lost) — died |
| 415.13 | " | 7 | " | a.m. (2 pupae, 1 skin) — 2 died; |
| 415.14 | " | 8 | a.m. | a.m. (2 pupae) — 1 iss. 19 Jan noon. |
| 415.15 | " | " | " | noon — died in pupa |
| 415.16 | " | " | " | " (no skin) — died |
| 415.17 | " | 9 | " | a.m. — died. |
| 415.18 | " | 13 | " | " (Wyeomyia) — died. |
| 415.19 | " | " | " | " (Culex rejector) — died. |
| 415.20 | " | ~~2~~ 14 | " | — (Wyeom.) — died. |
| 415.21 | " | 16 | " | a.m. (~~mosk~~skin) — iss. 23 Jan. a.m. |
| 415.22 | " | 18 | " | " (2 Wyeom.) — died |
| 415.23 | " | 20 | " | " (Wyeom.) — iss. 29 Jan. a.m. |
| 415.24 | " | 21 | " | " ( " ) — iss. 30 " " |

The Anopheles larva does not appear to be predaceous. Although there are no algae visible its body is bright green.

No. 415.

415.25 pupa 22 Jan. a.m. (Wyeom.) no skin — died.
415.26 " 23 " " " " ——— iss. 1 Feb. a.m.
415.27 " 24 " " " ( " no skin) — " " " " "
415.28 " " " " " (Megarhinus) — died 29 Jan.
415.29 " " " " " (Wyeom. - no skin) — died

25 Jan. Today, for the first time, I noticed one of the long slender larvae of Ceratopogon in this lot.

415.30 pupa 25 Jan. noon (Wyeom.) — died
415.31 " 26 " a.m. ( " ) — died.
415.32 " " " " ( " ) — iss. 3 Feb. a.m.
415.33 " 27 " " (3 " - 1 skin) — 2 iss. 3 Feb. a.m.; 1 Feb. 4 a.m.
415.34 " 29 " a.m. (Wyeom.) - died.
415.35 " " " " (Culex - no skin) — died
415.36 " 2 Feb. p.m. (Wyeom.) — iss. 11 Feb. a.m.
415.37 " 3 " a.m. ( " ) — " " " "
415.38 " 5 " " ( " ) — died
415.39 " 11 " " ( " no skin) — iss. 19 Feb. a.m.
415.40 " 12 " " ( " ) — died.
415.41 " 14 " " ( " ) — iss. 24 Feb. a.m. (water pupa)
415.42 " 24 " " ( " no skin) — 3 Mch. —

In this lot were a number of dark dipterous larvae long breathing tube, like that of a Culex. They were suspended from the water-film and when disturbed sank to the bottom. Their movements were slow. One larva isolated (Psychodidae).

415.43 produced imago 5 Mch. — the other larvae were all lost.

415.44 pupa 19 Mch. a.m (Culex) - pupa covered with a number of parasites — died.

Aedes fluviatilis Lutz.
Culex pinarocampa D. & K. No. 416
? Aedes atropalpus Coq. = spectans D. & K.

Córdoba, Ver., Mex. 4 Jan. 1908.

The small river, perhaps half a mile below town. The banks are precipitous with overhanging vegetation and there is a very steep path leading down to the water thru a coffee-plantation – many trees and undergrowth in places, especially towards river very thick. Huge boulder in dry part of streambed with depression on top containing perhaps a gall. of water. The water swarming with mosquito larvae of all sizes: many in last stage, and very many small ones which must have hatched since the last heavy rain – Dec. 31. The Culex sp. the common thing; a few Aedes atropalpus, nearly full grown, and many small ones. – the captured pupae have produced atropalpus. The Culex larvae, when disturbed, move along the bottom with very rapid switching motion – quite unusual for a Culex. There were some Coelopt. larvae in this catch – apparently a sp. of Haliplidae. (preserved in ale.)

416.1 pupa 6 Jan (1908) a.m. – iss. 9 Jan. a.m.
416.2 " " " " – " 10 " "
416.3 " 7 " noon. – iss 11 " 1 p.m.

No more larvae pupated and they died off slowly – partly, I believe, from want of the sunlight to which they are exposed on the rock.

16 Jan. Visited rock again and found conditions much the same as before. Made a special effort for Aedes and found a number of them in the seum on the bottom – apparently they come to the surface but rarely.

416.4 pupa 18 Jan. a.m. (Culex – 3 pupae, 1 skin) – iss. 23 Jan. a.m.
416.5 " " " noon ( " no skin) —— " " " "
416.6 " 19 " a.m. ( " 2 pupae, 1 skin) – " " " "
416.7 " " " " ( " ) —— —— " " " "
416.8 " " " p.m. ( " ) —— iss. 24 Jan. a.m.
416.9 " 20 " a.m. (no skin) – " " " "
416.10 " 20 " p.m. (Culex) —— died.
416.11 " 21 " a.m. " —— died.
416.12 " 21 " " (2 " , no skins) – died.

No. 416.

416.13 pupa 21 Jan. p.m. (Culex - no skin) - died.
416.14 " 26 " a.m. ( " ) — iss. 29 Jan. p.m.
416.15 " " " p.m. (Aedes) — died.
416.16 " 30 " a.m. ( " ) — died.
416.17 " 5 " " no skin — iss. 9 or 10 Feb.
416.18 " 6 " " (2 spec. - no skins) — 1 iss. 9 or 10 Feb., other died
416.19 " " " noon (Culex) — iss 9 or 10 Feb.
416.20 " 8 " a.m. (no skin) — " 14 Feb. a.m.
416.21 " 12 " " ( " ) — died.

14 Feb. Visited boulder again. There has been much rain recently. Found Aedes larvae in all stages and pupae.

416.p. - 17 captured pupae — iss. 15-17 Feb.
416.22 pupa 15 Feb. a.m. (3 Aedes) — 1 iss. 20 Feb. a.m. - 2 died.
416.23 " 16 " " (1 " ) — died.
416.24 " 18 " " ( " ) — iss. 23 Feb.
416.25 " " " p.m. ( " - no skin) - iss 23 Feb. a.m.
416.26 " 21 " a.m. ( " ) — died
416.27 " 22 " " ( " ) — died.

416.28 Ceratopogon sp. The larvae are abundant in the rubbish and in the daytime come to the margin of water, retreating at night (full grown larvae). Pupae are formed at edge of water-film, attached by larval skin which encloses tip of abdomen. 3 imagos iss. 8 - 10 Mch.

Anopheles franciscanus McC. No. 417.
Anopheles argyritarsis R:D.
Aedes
Culex coronator D. + K.
Culex declivator " "
Mansonia cratyrovalcos D. + K.

Cordoba, Ver., Mexico. 6 Jan. 1908.

The river back of the market-place. Isolated water-hole of some size in streambed. Anopheles larvae of all sizes rather abundant. A few Culex coronator - full grown and second stage ones. One full grown larva of an Aedes sp. Pupae were also present. There is one larva of a small Culex (mutator?)

417.1 pupa 7 Jan. noon. - (2 pupae, 1 skin - Anoph.) - 1 iss. 10 Jan. a.m. - other died in pupa
417.2 " " " p.m. (Anoph.) — iss 12 Jan. a.m.
417.3 " " " " " " — iss. 12 Jan. a.m.
417.4 " 9 Jan. a.m. " — iss. 13 Jan. p.m.
417.5 " " " noon " — died.
417.9 " " " p.m " — died.
417.10 " " " " (Aedes) — iss. 13 Jan. a.m.
417.11 " 10 " a.m. (Anoph.) - died

9 Jan. Visited same place again. Pupae are now far more abundant than larvae. The larvae are still of all sizes.

417.6 - 3 captured pupae of Anopheles - iss. 9-12 Jan. a.m.; 2 iss. - 13 Jan. a.m.
417.7 - pupa 9 Jan. noon (coronator) - died.
417.8 " " " p.m. " - died.
417.12 " 10 " a.m (2 Anoph. - no skins) - iss. 15 Jan. a.m.
417.13 " " " p.m. (coronator) - died.
417.14 " " " " (Anoph. 2 - 1 skin) — 1 iss. 15 Jan. a.m.; other p.m.
417.15 " " " " (Anoph.) — iss. 15 Jan. noon.
417.16 " 11 " a.m. (Anoph. - no skin) - iss. 15 Jan. noon.
417.17 " " " night (Anoph.) — died.
417.18 " 12 " a.m. (2 Anoph. - 1 skin) — 1 iss. 16 Jan. noon; other 17 a.m.
417.19 " 15 " p.m. (Anoph.) — died in pupa. argyritarsis.
417.20 " 18 " noon ( " - no skins) — iss. 23 Jan. a.m. - waterspread
417.21 " 19 " " ( " " ) — iss. 24 Jan. a.m.
417.22 " 22 " p.m. ( " ) ——— iss. 26 " "
417.23 " 23 " a.m. (2 Anoph. - no skins) — " " " p.m.
417.24 " " " noon (2 " " - one " ) — " 27 " a.m.
417.25 " 24 " a.m (Anoph - no skin) —— died
417.26 " " " noon ( " ) ——— died

No. 417.

417.27 pupa 25 Jan. a.m. (Anoph. – no skin) – died
417.28 " 26 Jan " (3 " – 1 skin) –
417.29 " " " " (2 " – 1 " ) – died.
417.30 " 27 " " (1 Anoph. – no skin) – died.
417.31 " " " " (C. coronator) — died
417.32 " 30 " " (Uranotaenia) — issd 2 Feb. p.m.

No. 418.

Anopheles argyritarsis R.D.
Culex coronator D. + K.
Culex

Córdoba, Ver., Mex. 6 Jan. 1908.

Same locality as No. 417. A small water-hole among rocks in stream-bed. Anopheles less abundant. Culex coronator very common, mostly full-grown; apparently another similar sp. — may be coronator with spines missing. A few larvae of a very small species, apparently Culex mutator; they lie back down on the bottom. Pupae abundant.

418.1 (coronator) - pupa 7 Jan. p.m. — iss. 11 Jan. noon.
418.2 " " " " " " — iss. 12 " —
418.3 " " " " " " — iss. 11 Jan. noon.
418.4 (Anoph.) — " 8 " a.m. (skin fragment) —
418 p. - captured pupae - iss. 7, 8 + 9 Jan.
418.5 (coronator) pupa 12 Jan. — died.
418.6 (Culex ? mortificator) pupa 16 Jan. a.m. — iss. 20 Jan. a.m.

No. 419.

Aedes fluviatilis Lutz

Córdoba, Ver., Mex. 16 Jan. 1908.

6 larvae of Aedes, nearly full grown, and two pupae from small pot hole on top of large boulder containing about half a pint of water. Stream-bed, some distance higher up than *4/6.

19 Jan. One larva pupated but the pupa appears weak and unable to rise to the surface — the skin cannot be found — I think the trouble is with the red Chironomus larvae which are very common in the mud and very hard to get rid of. Another larva is dead.

419.1 Aedes iss. 19 Jan. a.m. from captured pupa.
419.2 ( " ) pupa 27 " " (no skin) — iss. 30 Jan. a.m.

419.3 : 28 Jan. Small boulder in stream with small depression containing water — 1 small larva of Aedes, 3 pupae.

1 iss. 29 Jan. p.m.
1 " 30 " a.m.
1 " 31 " "

419.4 : 31 Jan. Boulder in stream with small hole containing about half pint of water. Several larvae, 3 pupae.

419.5. full grown larva with 419.4.

No. 420.

Anopheles

Córdoba, Ver., Mex. 16 Jan. 1908.

Stream-bed in ravine, close to #416. Hole among rocks close to stream, narrow but deep; contained much algae.
A number of Anopheles larvae – a younger one greenish, the others very dark in color – can this be due to shaded condition of hole?

The young larva died.

| | | | | | |
|---|---|---|---|---|---|
| 420.1 | pupa | 21 | Jan. | a.m. | – died |
| 420.2 | " | 22 | " | " | |
| 420.3 | " | " | " | " | – iss. 26 Jan. a.m. |
| 420.4 | " | 23 | " | " | – " " " p.m. |
| 420.5 | " | " | " | " | – " " " " |

No. 421.

Wyeomyia
Culex

Córdoba, Ver., Mex. 16 Jan. 1908.

Steep bank towards river, about a mile below town — near old suspension bridge. Slope planted with coffee and partly wild. On large felled tree, large bromeliaceous plants; one of these full of water which contained numerous larvae of Wyeomyia and Culex rejector — also other mosquito larvae; one sp. long & slender, over an inch long and with 6 dark abdominal rings.

421.1 captured pupa. — 1 iss. 19 Jan. a.m.
421.2 pupa 18 Jan. a.m. (Wyeom.) — iss. 28 Jan. a.m.
421.3 " " " " (Culex) — iss 26 Jan. a.m. - waters pranked.
421.4 " " " " ( " — no skin) — died.
421.5 " " " noon (Wyeom.) — died.
421.6 " 19 " a.m. (Culex) — iss. 26 Jan. p.m.
421.7 " 21 " noon (Wyeom.) — iss. 30 " "
421.8 " 23 " a.m. ( " ) — " 1 Feb. a.m.
421.9 " 24 " a.m. ( " ) — " 1 " p.m.
421.10 " 26 " " ( " ) — " 3 " a.m.
421.11 " 27 " " ( " ) — " 4 " "
421.12 " " " noon ( " ) — died
421.13 " 28 " a.m. (Culex) — iss. 2 Feb. p.m.
421.14 " " " p.m. ( " ) — " " " "
421.15 " " " " ( " — no skin) — iss. 3 Feb. a.m.
421.16 " " " " (Wyeom.) — iss. 5 Feb. a.m.
421.17 " " " " ( " — no skin) — ~~died~~ iss. 5 Feb. a.m.
421.18 " 29 " a.m. ( " ) — iss. 7 Feb. a.m.
421.19 " " " p.m. ( " ) —
421.20 " 30 " a.m. ( " ) — died
421.21 " " " noon ( " ) — iss. 7 Feb. a.m.
421.22 " " " p.m. ( " ) — " " " p.m.
421.23 " " " " ( " ) — died
421.24 " 31 " a.m. ( " ) — iss. 8 Feb.
421.25 " " " p.m. ( " ) — " " "
421.26 " " " " (4 " ) — " " "
421.27 " " " " (Culex) — iss. 6 Feb. a.m.
421.28 " " " 6 p.m. (Wyeom.) — " 11 " "
421.29 " 1 Feb. a.m. (3 " ) — iss. 9 Feb.
421.30 " " " " (3 " ) — " 9 or 10 Feb.

No. 421.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 421.31 | pupa | 1 | Feb. | a.m. | (Whyeom.) | — | iss. 9 or 10 Feb. | | | |
| 421.32 | " | " | " | " | ( " ) | — | " | " | " | " |
| 421.33 | " | " | " | noon | ( " ) | — | died. | | | |
| 421.34 | " | " | " | p.m. | ( " ) | — | " | " | " | " |
| 421.35 | " | " | " | " | (2 " ) | — | " | " | " | " |
| 421.36 | " | 2 | " | a.m. | (2 " ) | — | " | " | " | " |
| 421.37 | " | " | " | " | (2 " ) | — | " | 11 | Feb. | a.m. |
| 421.38 | " | " | " | " | (1 " ) | — | " | " | " | " |
| 421.39 | " | 3 | " | " | ( " ) | — | " | 12 or 13 | Feb. | |
| 421.40 | " | " | " | " | (3 " ) | — | " | " | " | " |
| 421.41 | " | " | " | noon | (1 " ) | — | " | " | " | " |
| 421.42 | " | " | " | p.m. | (2 " ) | — | " | " | " | " |
| 421.43 | " | 4 | " | a.m. | (1 " ) | — | " | " | " | " |
| 421.44 | " | " | " | " | (4 " -3 skins) | — | " | " | " | |
| 421.45 | " | " | " | noon | (1 " ) | — | " | " | " | " |
| 421.46 | " | " | " | p.m. | ( " ) | — | " | " | " | " |
| 421.47 | " | 5 | " | a.m. | ( " ) | — | died | | | |
| 421.48 | " | " | " | " | (2 " ) | — | iss. 14 Feb. a.m. | | | |
| 421.49 | " | 6 | " | " | (1 " ) | — | " | " | " | " |
| 421.50 | " | " | " | " | ( " ) | — | " | " | " | " |
| 421.51 | " | 6 | " | noon | ( " ) | — | " | 15 | " | " |
| 421.52 | " | " | " | " | ( " ) | — | died | | | |
| 421.53 | " | " | " | p.m. | (2 " ) | — | 1 iss. 15 Feb. a.m.; 1 died. | | | |
| 421.54 | " | " | " | " | (boiler) | — | died. | | | |
| 421.55 | " | " | " | " | (Whyeom.) | — | iss. 15 Feb. a.m. | | | |
| 421.56 | " | " | " | " | ( " ) | — | died | | | |
| 421.57 | " | " | " | " | (2 " ) | — | 1 iss. 15 Feb. a.m.; 1 died. | | | |
| 421.58 | " | 7 | " | a.m. | (3 " ) | — | " | " | " | " |
| 421.59 | " | " | " | p.m. | (1 " ) | — | " | " | " | " |
| 421.60 | " | 8 | " | a.m. | ( " ) | — | died | | | |
| 421.61 | " | " | " | " | (2 " -1 skin) | — | iss. 16 Feb. a.m. | | | |
| 421.62 | " | " | " | p.m. | (2 " ) | — | iss. 17 Feb. a.m. | | | |
| 421.63 | " | 9 | " | — | (boiler - no skin) | — | iss. 14 Feb. a.m. | | | |
| 421.64 | " | 10 | " | a.m. | (2 boilers) | — | 1 died, 1 iss. 15 " " | | | |
| 421.65 | " | 9 | " | — | (Whyeom. - no skin) | — | died | | | |
| 421.66 | " | 9+10 | " | — | (3 " -2 " ) | — | 1 iss. 17 Feb. a.m. | | | |
| | | | | | | | 1 " 18 " " | | | |
| | | | | | | | 1 died. | | | |

No. 421.

Ballance of larvae preserved March 18

421.67 pupa 12 Feb. a.m. (Wyeom.) – died.
421.68 " " " " (3 " ) – 2 iss. 20 Feb. a.m. – died.
421.69 " " " " (Cooley) – died.
421.70 " 13 " " (Wyeom.) – iss. 22 Feb. a.m.
421.71 " " " " (2 " ) – 1 " " " " , 1 died.
421.72 " " " p.m. (1 " ) — " 23 " "
421.73 " " " " ( " – slender tube!) – died.
421.74 " 14 " a.m. (2 " ) – died.
421.75 " 15 " " (1 " ) –
421.76 " 16 " " ( " ) – died.
421.77 from bromelia on other side of river, exposed situation – single larva – pupa 19 Feb. a.m. (Cooley) – iss. 26 Feb.
421.78 pupa 19 Feb. a.m. (2 Wyeom. – no skins) – iss. 29 Feb. a.m.
421.79 " 20 " " (1 " ) — iss. 1 Mch. a.m.
421.80 " 21 " " ( " ) – died.
421.81 " 22 " " ( " ) – iss. 2 Mch. a.m.
421.82 " 23 a 24 " — ( " no skin) – " 3 " "
421.83 " 25 " a.m. ( " ) — " 4 " "
421.84 " 26 " " (3 " ) — 1 " " " " , 2 iss. 5 Mch. a.m.
421.85 " 29 " " (1 " no skin) — iss 6 Mch. a.m.
421.86 " 1 Mch. a.m. (1 " ) — iss. 7 Mch.
421.87 " " " " ( " ) – " " " "
421.88 " 3 " p.m. ( " ) –
421.89 " 4 " a.m. ( " ) – " 11 Mch. a.m.
421.90 " 5 " " ( " ) — " 11 " p.m.
421.91 " 5 " " (2 " ) — " " " "
421.92 " 6 " " (1 " ) — " 14 " a.m.
421.93 " 8 " " (1 " ) — " 15 " " (waterspranded)
421.94 – 2 Chiro. mid pupae iss. 7 Mch. (pupal skins preserved).
421.95 pupa 8 Mch. p.m. (Wyeom.) — iss. 16 Mch. a.m.
421.96 " 10 " a.m. ( " ) — " 18 " "
421.97 " 11 " " ( " ) — " " " "
421.98 " 13 " — (2 " , 1 skin) –
421.99 " " " — (Cooley) — iss. 17 Mch. a.m.
421.100 " 15 " a.m. ( " ) –
421.101 " " " " (2 Wyeom., 1 skin) — died.
421.102 " " " p.m. (1 " ) — iss. 22 Mch.
421.103 " 16 " a.m. (2 " ) — " " "
421.104 " 18 " " (1 " ) — died.

No. 422.

Anopheles strigimacula D+K.
Culex pinarocampa D.+K.
" derivator " "
" Aedes cinereus

Córdoba, Ver., Mex. 20 Jan. 1908.

River bed in deep ravine – a short distance above *416. Pool of clear water, shaded by overhanging high bank and by large boulders. Contained a few larvae and pupae. One Anopheles larva. Most of the larvae appear to be Culex derivator. A few appear to be the same Culex sp. as *416. Several young larvae appear to be Culex mutator.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 422.1 | pupa | 21 | Jan. | a.m. | (derivator) | — | iss. | 25 | Jan. | a.m. |
| | | | | | (Culex sp.) | — | iss. | 24 | Jan. | a.m. - waterspranled. |
| 422.2 | " | " | " | " | (derivator) | — | " | 25 | " | " - specimen lost. |
| 422.3 | " | " | " | " | | | | | | |
| 422.4 | " | " | " | noon | (Culex sp.) | — | " | " | " | " |
| 422.5 | " | 22 | " | a.m. | ( " ) | — | | | | |
| 422.6 | " | " | " | " | (derivator - 2 spec.) | — | iss. | 26 | Jan | a.m. |
| 422.7 | " | " | " | p.m. | (2 spec. - 2 species Culex) | - | " | " | " | " |
| 422.8 | " | " | " | " | (derivator) | — | iss. | 26 | Jan. | p.m. |
| 422.9 | " | " | " | night | (2 " ) | — | " | " | " | " |
| 422.10 | " | 23 | " | a.m. | ( " ) | — | " | 27 | " | a.m. |
| 422.11 | " | " | " | " | ( " ) | — | " | " | " | " |
| 422.12 | " | " | " | " | (Anopheles) | — | " | 27 | " | a.m. |
| 422.13 | " | " | " | noon | (derivator) | — | " | " | " | " |
| 422.14 | " | " | " | " | ( " ) | — | " | " | " | " |
| 422.15 | " | " | " | " | ( " ) | — | | | | |
| 422.16 | " | 24 | " | a.m. | ( " ) | — | iss. | 27 | " | p.m. |
| 422.17 | " | " | " | " | ( " ) | — | " | 28 | " | a.m. |
| 422.18 | " | " | " | p.m. | ( " ) | — | " | " | " | " |
| 422.19 | " | 28 | " | a.m. | (Aedes) | — | " | 31 | " | " |
| 422.20 | " | " | " | " | (derivator) | — | " | 1 Feb. | " | |
| 422.21 | " | 29 | " | " | (Culex) | — | died. | | | |

No. 423.

Lutzia
bulex pinaroensis D+K.

Córdoba, Ver., Mex. 16 and 20 Jan. 1908.

Rivers-bed in ravine – farther down stream than #416. Large boulder with shallow depression on top containing about two quarts of water. On Jan. 16 the water contained many bulicid pupae and seven larvae of Lutzia. Had no collecting outfit – brought away two larvae in vials. Jan. 20 the rock was visited again; in the meantime there had been heavy rain. The pupae had nearly all disappeared — a few empty skins, 3 pupae and one larva of Lutzia were all that remained.

423.1 pupa captured 20 Jan. – iss. same day.
423.2 puparia found on margin of water and flies bred from them.
423.3 pupa 25 Jan. p.m. (Lutzia) — iss. 29 Jan. p.m.
423.4 " 26 " a.m. ( " ) — iss. 29 Jan. p.m.
423.5 " 27 " " ( " ) — " ~~30~~ 31 " a.m.

No. 424.

Anopheles strigimacula D. + K.
Culex
" ~~3 mutator~~ pinarocampa D. + K.

Coidoba, Ver., Mex. 22 Jan. 1908.

River bed near *417 and 418. Opposite side, close to steep bank, pool, apparently of spring water. Larvae of Culex and Anopheles, not very abundant. The Culex appears to be the same as in *416 — also one larva of C. ? mutator.

424.1 pupa 22 Jan. p.m. (Culex) — ins. Jan. 26 a.m.
424.2 " " " " ( " ) — " " " "
424.3 " " " " ( " ) — " " " p.m.
424.4 " 23 Jan. a.m. (Anoph.) — " " 27 a.m.
424.5 " " " " (4 " ) — ins. (2) 26 Jan. p.m.
424.6 " " " " (9 Culex) — ins. 26 Jan. p.m.
424.7 " 22 " p.m. (Anoph.) — died.
424.8 " 23 " noon ( " ) — died
424.9 " " " " (Culex) — ins. 27 Jan. a.m.
424.10 " " " " ( " ) — " " " "
424.11 " " " 6 p.m. ( " ) — " " " "
424.12 " " " " ( " ) — ins. 27 Jan. a.m.
424.13 " " " 11 " (Anoph.) — " " " p.m.
424.14 " 24 " a.m. (Culex (2)) — " " " "
424.15 " " " noon ( " ) — " 29 " a.m.
424.16 " " " p.m. ( " ) — ins. 28 Jan. a.m.
424.17 " 25 " a.m. (C. mutator) — died.

No. 425.

Aedes cinereus D. & K.
Culex coronator
Culex pinaroampa

Córdoba, Ver., Mex. 26 Jan. 1908.

Slope to river, back of town: east of Huatusco R.R. through steep bank, near market. Small ditch of muddy water contained full-grown larvae and pupae of Aedes and Culex: not very numerous. Floating larval skins are Culex coronator, but the few Culex larvae captured are another sp. — most of the larvae are Aedes.

425.1 pupa 26 Jan. p.m. (Aedes) — iss. 29 Jan. p.m.
425.2 " " " " " — " " " " "
425.3 " " " " " — " " " " "
425.4 " " " " " — died.
425.5 " " " " " — iss 29 Jan. p.m.
425.6 " " " " " " 30 " a.m.
425.7 " " " " " — iss. 30 Jan. a.m.
425.8 " " " " (3 Aedes, 1 Culex) — iss. 29 Jan. p.m.
425.9 " 27 " a.m. (6 Aedes) — iss. 30 Jan. a.m.
425.10 " " " " (1 Culex) — died.
425.11 " " " " (1 Aedes) — iss. 30 Jan. a.m.
425.12 " " " p.m. ( " ) — died
425.13 " " " " ( " ) — iss. 30 Jan. p.m.
425.14. captured pupae, iss. 29 Jan. a.m.

No. 426.

Culex pinarocampa

Cordoba, Ver., Mex. 31 Jan. 1908.

Further down stream than #416. The stream here enters a cañon over rapids – the water in the cañon becoming placid farther down. On a large boulder, where the rapids pass into the cañon, a depression containing water. On this and the adjoining boulder were the excrements of some predaceious mamal – also some fragments of a crab – some of the excrement contained hair. The water in the depression was foul with excrement and covered with a thick scum. The water contained about 100 pupae, some pupal skins, and one larva.

426.1 pupated 31 Jan. p.m. – iss. 3 Feb. p.m.

426.p. captured pupae, iss. Feb. 1 & 2.

Anopheles argyritarsis
Uranotaenia geometrica Theo.
Culex

No. 427.

Córdoba, Ver., Mex. 5 Feb. 1908

River below Town: open place with numerous boulders. Isolated water-hole among boulders. The deeper part of hole filled with dense mass of algae and feeding on these were many larvae of Uranotaenia; their behavior is strikingly like Anopheles; when frightened they go down into the algae-mass and remain a long time. Most of the larvae were in last stage and there were some pupae, which also stay below a long time and, in spite of their long breathing-trumpets do not become entangled in the algae. Adults were emerging. There were a few larvae of Anopheles and a few small larvae of Culex.

427.p. - captured pupae, iss. 5 & 6 Feb.
427.1 pupa 6 Feb. noon (Anopheles) - iss. 9 or 10 Feb.
427.2 " " " p.m. (3 " ) - " 11 Feb. a.m.
427.3 " 8 " a.m. (1 " , no skin) - iss. 12 Feb.
427.4 " " " p.m. (1 " ) - died.
427.5 " " " " (Uranot.) - died.
427.6 " 9 " a.m. ( " ) - died.
427.7 " 9 " " (14 " ) - 10 died. - 3 iss. 13 Feb. a.m.; 1 iss. p.m.
427.8 " 10 " " (27 " ) - 22 died - 5 iss. 14 " "
427.9 " " " " (Anopheles) - died.
427.10 " " " " (Uranot.) - died
427.11 " " " p.m. ( " - no skin) - died
427.12 " 11 " a.m. ( " ) - died
427.13 " " " " (4 " ) - 2 " - 2 iss. 15 Feb. a.m.
427.14 " " " noon (1 " ) - died
427.15 " 13 " a.m. ( " ) - died
427.16 " " " " (Anopheles) - died
427.17 " " " " (2 Culex - 1 skin) - 1 died, 1 iss. 16 Feb. a.m.
427.18 " 14 " " (1 " ) - iss. 17 Feb. a.m.
427.19 " " " " (Anopheles) - " 18 " "
427.20 " " " " (3 Uranot.) - 1 " " " " , 2 died.
427.21 " " " " (Culex) - died
427.22 " 15 " " (Anopheles) - died.
427.23 " 17 " " (4 Uranotaenia) - 2 died, 1 iss. 22 Feb. a.m.

427.27 pupa 19 Feb. a.m. (Anopheles) - died.
427.28 " 20 " (2 " 1 skin) - iss. 24 Feb. a.m.
427.29 " 24 " (1 " ) - died.

427.24 pupa 18 Feb. a.m. (Uranot. - no skin) - died.
427.25 " 19 " ( " ) - died.
427.26 " " " (Anopheles) - died.

Anopheles argyritarsis
Culex coronator D+K.
" pinarocampa D+K.

No. 428.

Córdoba, Ver., Mex. 4 Mch. 1908.

The River (San Antonio), same locality as Nos. 417 & 418, a little farther down. There has been no rain for some time and all the pools have dried out. One shallow pool between rocks, maintained by a percolation of water from river. Here were larvae of Culex coronator in all stages, and apparently of another species without the spines on tube. A few larval of Anopheles, all sizes. One larva of Culex mutator. One larva of Diptera – bright ochre yellow – this died.

| | | | | | | |
|---|---|---|---|---|---|---|
| 428.1 | pupa | 4 Mch. | p.m. | (3 Culex) | – 2 iss. 7 Mch. | – 1 died. |
| 428.2 | " | " | " | " | (" " ) | – iss. " " |
| 428.3 | " | 5 | " | — | (4 " 1 skin) | – iss. 7 Mch. |
| 428.4 | " | 6 | " | a.m. | (10 " 4 " ) | – 6 " 8 " – 4 died. |
| 428.5 | " | 7 | " | — | (10 " 3 " ) | – 2 " 10 " – 8 died. |
| 428.6 | " | " | " | — | (Anopheles) | — iss. " " a.m. |
| 428.7 | " | 8 | " | a.m. | (2 " – 1 skin) | – died |
| 428.8 | " | " | " | " | (4 Culex – 3 skins) | – 1 iss. 10 Mch.; 2 iss. 11 Mch. a.m. |
| 428.9 | " | 10 | " | " | (Anoph. – no skin) | – iss. 13 Mch. |
| 428.10 | " | 10 or 11 | " | — | (Culex – no skin) | — died. |

Aedes (insolita Bq.) oswaldi No. 429.
Culex consternator D. + K.

Córdoba, Ver., Mex. 7 Mch. 1902

Above suburb of San Jose. Coffee orchard on hilly ground near stream. Open to sun. Near top of hill a mango-tree with large hole about 3 ft. from ground; containing about a gallon of water. Water very dark, containing much rubbish and dead leaves. A species of Culex with long slender tube abundant, all in last stage. Less abundant, and varying more in size, a sp. of Aedes. Pupae of both species.

8 Mch. Three numerous very small larvae (~~Culex~~), apparently newly hatched.

| | | | | | |
|---|---|---|---|---|---|
| 429.1 | supra | 8 Mch. | a.m. | (Culex) | — iss. 13 Mch. |
| 429.2 | " | " | " | " | — died |
| 429.3 | " | " | " | (2 Aedes) | — iss. 12 Mch. |
| 429.4 | " | " | " | (2 " , 1 skin) | — iss. 12 Mch. |
| 429.5 | " | " | " | (2 Chiron. - no " ) | — iss. 9 Mch. |
| 429.6 | " | " | " | (Culex) | — iss. 13 Mch. |
| 429.7 | " | " | " | (Aedes) | — " " " |
| 429.8 | " | " | p.m. | " | — died |
| 429.9 | " | " | " | " | — iss. 13 Mch. |
| 429.10 | " | " | " | (Culex) | — " " " |
| 429.11 | " | 9 | a.m. | (Aedes) | — " " " |
| 429.12 | " | " | " | (4 Culex - 2 skins) | — 3 iss. 14 Mch. a.m., 1 died |
| 429.13 | " | " | " | (3 " 1 " ) | — 2 iss. 14 Mch. a.m. |
| 429.14 | " | " | " | (3 Aedes) | —— iss. 13 Mch. |
| 429.15 | " | " | " | (Culex) | — died. |
| 429.16 | " | " | p.m. | (3 " ) | — iss. 14 Mch. p.m. |
| 429.17 | " | " | " | (2 " ) | — died |
| 429.18 | " | " | " | (1 " ) | — died |
| 429.19 | " | " | " | (1 " ) | — iss. 14 Mch p.m. |
| 429.20 | " | " | " | (Aedes) | — iss. 14 Mch. a.m. |
| 429.21 | " | " | " | ( " ) | — " " " " " |
| 429.22 | " | " | " | (no skin) | — died |
| 429.23 | " | 10 | a.m. | (Aedes) | — ~~died~~ iss. 14 Mch. p.m. |
| 429.24 | " | " | " | (7 Culex - 3 skins) | — 4 iss. 15 Mch. a.m. |
| 429.25 | " | " | " | (4 " 1 " ) | — died |

No. 429.

429.26. Chironomid larvae which jump upon those of Culex. In two cases these larvae had seized a Culex larva beneath, near the thorax, killing it. 2 pupae, presumably of this larva, 10 Mch. a.m. — 1 iss. 11 Mch. a.m.

| | | | | | | |
|---|---|---|---|---|---|---|
| 429.27 | pupa | 10 Mch. | noon | (Culex) | — died | |
| 429.28 | " | " | p.m. | (Aedes) | — died | |
| 429.29 | " | " | " | ( " ) | — died. | |
| 429.30 | " | " | " | (Culex) | — iss. 15 Mch. p.m. | |
| 429.31 | " | " | " | (Aedes) | — iss. 15 Mch. a.m. | |
| 429.32 | " | 11 | a.m. | (2 " ) | — died | |
| 429.33 | " | " | " | (Culex) | — died. | |
| 429.34 | " | " | " | (4 " , 2 skins) | 2 iss. 16 Mch. a.m.; 2 died | |
| 429.35 | " | " | " | (3 " , 1 " ) | — 1 " " " " , 2 " | |
| 429.36 | " | " | " | (1 " ) | — died. | |
| 429.37 | " | " | p.m. | ( " ) | — died | |
| 429.38 | " | " | " | ( " ) | — iss. 16 Mch. a.m. | |
| 429.39 | " | 12 | a.m. | (3 " , 2 skins) | — iss. 17 " " | |
| 429.40 | " | " | " | (4 " 1 " ) | — 1 " " " " , 3 died | |
| 429.41 | " | " | " | (Aedes) | — died. | |
| 429.42 | " | " | " | (Culex) | — iss. 17 Mch. a.m. | |
| 429.43 | " | " | p.m. | ( " ) | — " " " " | |
| 429.44 | " | " | " | ( " ) | — died. | |
| 429.45 | " | " | " | (2 " , 1 skin) | — iss. 17 Mch. a.m. | |
| 429.46 | " | " | " | (Aedes) | — died. | |
| 429.47 | " | " | " | ( " ) | — died. | |
| 429.48 | " | 13 | a.m. | (Culex) | — died. | |
| 429.49 | " | " | — | ( " ) | — iss. 18 Mch. a.m. | |
| 429.50 | " | 14 | a.m. | (3 Culex, 2 skins) | — 2 iss 18 Mch. | |
| 429.51 | " | " | " | (2 " , no " ) | — died. | |
| 429.52 | " | " | p.m. | (1 " ) | — died | |
| 429.53 | " | " | " | ( " ) | — iss. 18 Mch. | |
| 429.54 | " | 15 | a.m. | (2 " , 1 skin) | — died. | |
| 429.55 | " | 16 | " | (4 " , 3 " ) | — | |
| 429.56 | " | 17 | " | (2 " , 1 " ) | — died. | |
| 429.57 | " | 18 | — | (1 " ) | — died. | |
| 429.58 | " | 19 | a.m. | (2 Culex, 1 skin) | — iss. 22 Mch. | |
| 429.59 | " | 21 | " | (Aedes) | — iss. 25 Mch. a.m. | |

No. 429.

429.60 pupa 22 Mch. a.m. (Aedes) – died.

24 March. Ballance of larvae dead killed. There are still in this but a number very small larvae which keep near the bottom. They are Culex, in second stage – one of them in first stage. This proves that the eggs of this Culex are not laid in a raft; they must have been in the rubbish in the bottom of the bottle.

9 April. Dirt from this same tree hole, which now contained no water, still moist, placed in water, 10 a.m.

10 April. At noon several newly hatched larvae could be seen. – Three larvae grown to maturity, 2 of them

429.61 pupa 20 Ap. a.m. (Aedes) – iss. 23 Ap. a.m.

Most young larvae (Aedes) appeared several days ago and are growing rapidly.

429.62 pupa 22 Ap. a.m. (1 Aedes) – iss. 24 Ap. a.m.
429.63 " 24 " " ( " ) – iss. 26 " a.m.
429.64 " 27 " a.m. ( " ) –

Still grown larvae of Tanytarsus and Cyphonidae appear.

Wyeomyia *stellata*

Culex *stenolepis*

No. 430.

Córdoba, Ver., Mex. 17 March 1908.

Coffee-groves east of town, towards river. Bromelicids growing on tall mango tree. Three plants removed that grew about 20 ft. from the ground. One of these contained no water; the second was much choked with rubbish and contained only small mosquito larvae. The third plant contained larvae of all sizes and pupae.

430.1 pupa 18 Mch. a.m. (Wyeom.) - died.
430.2 " 19 " " (3 " , several skins) — died.
430.3 " " " p.m. (1 " ) — iss. 25 Mch. a.m.
430.4 " 21 " a.m. (3 " ) — " 26. " p.m.
430.5 " " " " (Culex) — iss. 25 Mch. a.m.
430.6 " 22 " " ( " ) — " 26 " "
430.7 " " " " (3 Wyeom. - 1 skin) — iss. 27 Mch.
430.8 " 21 " p.m. (1 " ) — iss. 27 Mch. a.m.
430.9 " " " " (Culex) — died.
430.10 " 23 " a.m. (2 " ) — iss 26 Mch. p.m.
430.11 " " " p.m. ( " " ) — " 27 " "
430.12 " 24 " a.m. ( " " ) — " 28 " a.m.
430.13 " " " " (1 " ) — " " " " — escaped
430.14 " " " " (Wyeom.) — " 30 " a.m.
430.15 " " " p.m. (Culex) — " 28 " p.m.
430.16 " 25 " a.m. ( " ) — " 29 " a.m.
430.17 " " " " (Wyeom.) — died.
430.18 " 26 " " ( " ) —— ~~iss. 31 Mch.~~ died.
430.19 " " " " (2 " 1 skin) — —— "
430.20 " " " " (2 Culex) — 1 iss. 29 Mch. a.m.
430.21 " " " " (4 Culex) — iss. 28 Mch. — 3 died.
430.22 " " " p.m. (1 " ) — died.
430.23 " " " " (Wyeom.) — iss. 31 Mch.
430.24 " 27 " a.m. (Culex) — iss. 29 Mch. p.m.
430.25 " " " " (1 " ~~died~~) — iss. 29 Mch. a.m.
430.26 " " " p.m. (1 Culex) — " 30 " "

No. 430.

| | | | | | | |
|---|---|---|---|---|---|---|
| 430.27 | Jupa | 27 | March | a.m. | (Coulex) | — iss. 30 Mch. p.m. |
| 430.28 | " | " | " | p.m. | ( " ) | — iss. 30 Mch. a.m. |
| 430.29 | " | 28 | " | a.m. | (2 " ) | — " 31 " |
| 430.30 | " | " | " | " | (2 Whyeom.) | — 2 Apr. a.m. |
| 430.31 | " | " | " | " | (2 Coulex - 1 skin) | — 1 iss. 31 Mch. — 1 died |
| 430,32 | " | 29 | " | " | (4 Whyeom.) | — |
| 430.31 | " | 30 | " | " | (2 " ) | — dead |
| 430,32 | " | " | " | " | (1 " ) | — iss. 3 Apr. a.m. |
| 430.33 | " | " | " | " | (4 Coulex) | — " " " " — |
| 430.34 | " | " | " | p.m. | (1 Whyeom.) | — dead |
| 430.35 | " | 31 | " | a.m. | (2 " ) | — dead |
| 430.36 | " | " | " | " | (3 " ) | — dead |
| 430.37 | " | " | " | " | (Coulex) | — iss. 3 Apr. a.m. |
| 430.38 | " | " | " | p.m. or 1 April | a.m. (Coulex) | — iss. 4 Apr. a.m. |
| 430.39 | " | " | " | " " | " " | " (4 Whyeom.) — " 6 " (1 died) |
| 430.40 | " | " | " | " " | " " | " (6 " ) — iss. 5 Apr. + 6 Apr. |
| 430.41 | " | 2 April | | a.m. | (4 Whyeom.) | — dead, iss. 6 Apr. |
| 430.42 | " | " | " | " | (1 " ) | — died. |
| 430.43 | " | " | " | " | (2 Coulex) | — iss. 5 Apr. |
| 430.44 | " | 3 | " | " | (2 Whyeom.) | — died |
| 430.45 | " | " | " | " | (1 " ) | — iss. 8 Apr. a.m. |
| 430.46 | " | " | " | " | (Coulex) | — " 7 " " |
| 430.47 | " | " | " | p.m. | (Whyeom.) | — died |
| 430.48 | " | 4 | " | a.m. | ( " ) | — died |
| 430.49 | " | " | " | p.m. | ( " ) | — died. |
| 430.50 | " | 5 | " | " | ( " ) | — died. |
| 430.51 | " | " | " | " | ( " ) | — " |
| 430.52 | " | 5 | " | p.m. or 6 | a.m. ( " ) | — " |
| 430.53 | " | " | " | " | " " " | ( " ) — " |
| 430.54 | " | 6 | " | a.m. | (Whyeom.) | — " |
| 430.55 | " | 7 | " | " | ( " ) | — iss. 13 Apr. |
| 430.56 | " | 8 | " | " | ( " ) | — died |
| 430.57 | " | " | " | " | (4 " ) | — 1 " , 2 iss. 13 Apr. |
| 430.58 | " | 9 | " | " | (1 " ) | — iss. 14 Apr. |

Culex stenolepis

No. 431.

Córdoba, Ver., Mex. 17 March 1908

Group of Bromeliids described in #430. The second plant, choked with rubbish and containing only very small Culex larvae. Also larvae of Psychodid, rat-tailed maggot, etc.

22 March. The Culex larvae have grown very rapidly and are now in 3d or 4th stage. There are also very small Culex larvae which lie on their backs.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 431.1 | pupa | 24 | March | a.m. | (Culex) | — | iss. | 27 | Mch. | a.m. |
| 431.2 | " | " | " | p.m. | ( " ) | — | " | ~~28~~ | " | p.m. |
| 431.3 | " | " | " | " | ( " ) | — | " | 27 | " | p.m. |
| 431.4 | " | " | " | " | (2 " ) | — | " | " | " | a.m. |
| 431.5 | " | " | " | " | (2 " ) | — | iss. | 27 | Mch. | a.m. |
| 431.6 | " | 25 | " | — | (2 " ) | — | " | " | " | p.m. |
| 431.7 | " | " | " | — | (4 " ) | — | " | " | " | " |
| 431.8 | " | " | " | — | (5 " ) | — | " | " | " | " |
| 431.9 | " | " | " | — | (1 " ) | — | " | " | " | " |
| 431.10 | " | 26 | " | a.m. | (1 " ) | — | " | 28 | " | " |

No. 432.

Megarhinus
Culex

Córdoba, Ver., Mex. 21 March, 1908.

Same tree as #430 + 431; bromelia group at height of about 50 ft. First plant lowered contained one pupa and two larvae of Megarhinus - one larva large the other small. Single pupa of Culex. Several fragments of Wyeomyia larvae. Numerous rat-tail maggots; also many larvae of Psychodids and two pupae (free-swimming but not very active.

432.1 Megarhinus pupa - iss. 24 March, p.m.
432.2 Culex " ——— o (+24
432.3 Psychodid pupae (2) iss. 22, March.
432.4 pupa 27 March a.m. (Megarhinus) — iss. 2 Apr. a.m.
432.5 " 4 Apr. " ( " ) — " 10 " p.m.

Megarhinus aspectans
Culex rejector & stenolepis

No. 433.

Córdoba, Ver., Mex. 28 March 1908.

Another one of group of three Bromeliids described in *432. Contained larvae of two sp. of Culex and one rather small larva of Megarhinus. Numerous "rat-tail" maggots, larvae of Psychodidae and other forms in lesser numbers — several dragon-fly larvae, Tipulids (?), and a curious Syrphid.

| | | | | | | |
|---|---|---|---|---|---|---|
| 433.1 | pupa | 23 | Mch. | a.m. | (2 Culex) | — iss. 27 Mch. a.m. |
| 433.2 | " | " | " | " | (1 " ) | — " " " " |
| 433.3 | " | 24 | " | p.m. | ( " ) | — iss. 25 Mch. a.m., 1 died. |
| 433.4 | " | 25 | " | a.m. | ( " ) | — " 27 " p.m. |
| 433.5 | " | " | " | " | (Whyeom.) | — iss. 25 Mch. a.m., 30 Mch. a.m. |
| 433.6 | " | " | " | " | (Culex) | — " 27 " p.m. |
| 433.7 | " | 26 | " | " | ( " ) | — " 29 " a.m. |
| 433.8 | " | " | " | " | ( " ) | — " 30 " " |
| 433.9 | " | " | " | " | (2 Psychod. - no skins) | — died. |
| 433.10 | " | " | " | p.m. | (Culex) | — iss. 29 Mch. a.m. |
| 433.11 | " | 27 | " | a.m. | (2 " ) | — " 30 " " |
| 433.12 | " | " | " | " | (2 " ) | — iss. 29 Mch. p.m. |
| 433.13 | " | " | " | p.m. | (1 " ) | — |
| 433.14 | " | " | " | " | ( " ) | — |
| 433.15 | " | " | " | " | (Whyeom.) | — ~~iss. 31 Abstn~~ dead. |
| 433.16 | " | 28 | " | a.m. | (Culex) | — died. |
| 433.17 | " | " | " | " | ( " ) | — iss. 30 Mch. p.m. |
| 433.18 | " | 29 | " | " | (2 " ) | — " 3 Apr. a.m. |
| 433.19 | " | 30 | " | " | (4 " ) | — " " " p.m. |
| 433.20 | " | " | " | " | ( " " - no skins) | — iss. 31 Mch. +3 Apr. |
| 433.21 | " | " | " | p.m. | (1 " ) | — died. |
| 433.22 | " | 31 | " | a.m. | (Megarhin) | — iss. 6 Apr. a.m. |
| 433.23 | " | 2 April | | a.m. | (Culex) | — iss. 4 Apr. a.m. |

Wyeomyia
smithii

No. 434.

Córdoba, Ver., Mex. 21 March, 1908.

Same coffee grove. Bromeliids on fallen branch on the ground. Two of them without water; the third contained water and mosquito larvae.

434.1 pupa 23 March p.m. (Wyeom.) — iss. 29 Mch. a.m.
434.2 " ♂ Taeniorhynchus (?) iss. 28 Mch. a.m.
434.3 " 30 Mch. (Taeniorhynchus) iss. 31 Mch. (larvae & pupal skins)
434.4 " 9 April a.m. (Wyeom.) — died
434.5 " 11 " " { " } —

No. 435.

Culex cubensis
Stegomyia calopus.

Córdoba, Ver., Mex. 24 March 1908.

An patio of large old building, used as store-house. Unused ~~~~ cement wash-trough containing some stagnant water. Great numbers of larvae, pupae and egg-boats of Culex, a smaller number of Stegomyia larvae and pupae. A very few black larvae of Psychodids. Crimson larvae and pupae of Chironomus common in rubbish on bottom.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 435.1 | pupa | 24 | March. | — | (Culex) | — | iss. | 27 | March. a.m. |
| 435.2 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.3 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.4 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.5 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.6 | " | " | " | — | ( " ) | — | | | |
| 435.7 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.8 | " | " | " | — | ( " ) | — | " | " | " " |
| 435.9 | " | " | " | — | (2 " ) | — | " | " | " " |
| 435.10 | " | " | " | — | (8 " ) | — | " | " | " " |
| 435.11 | " | " | " | — | (18 " ) | — | " | " | " " |
| 435.12 | " | 26 | " | a.m. | (1 " ) | — | " | 28 | " p.m. |
| 435.13 | " | 27 | " | " | ( " ) | — | " | 29 | " a.m. |
| 436.14 | " | " | " | " | (5 " ) | — | " | 28 | " p.m. |
| 436.15 | " | " | " | " | (1 " ) | — | " | | |
| 436.16 | " | " | " | " | (10 Mosquitoes) | — | " | 29 | " a.m. |

A few ephemerid larvae in this lot seem to have destroyed all the Stegomyia larvae which kept to the bottom.

Culex

No. 436.

Córdoba, Ver., Mex. 26 Mch. 1908.

Egg-boat laid, probably during night, in bottle of bromelia-water standing on my table. 94 eggs, in rows as follows:

2-11-15-17-17-17-11-4.

27 Mch. a.m. – eggs have hatched.

436.1 supra 10 Apr. a.m. – iss. 13 Apr. a.m.

Culex sinimetes D.+K.
" lactator. D.+K.

No. 437.

Orizaba, Ver., Mex. 31 March 1908.

Outskirts of city: enlargement of drain-ditch in street — hole about a foot deep and 3 ft. across, surrounded by weeds — current very slight. A few larvae and pupae of Culex. On bottom numerous pale brownish worms, in groups, which keep up a constant vibratory motion — remaining attached to bottom. Also a few "rat-tail" larvae.

437.1 pupa 1 April a.m. — iss. 3 Apr. a.m.
437.2 " 2 " " — iss. 4 " "
437.3 " " " " (2 spec.) — iss. 4 " to 5 Apr. a.m.
437.4 " 3 " " (4 " ) — " " to 5 Apr. a.m.
437.5 " " " " (1 " ) — " 6 Apr. a.m.
437.6 " " " noon ( " ) — " " " "
437.7 " " " p.m. (lactator) — iss. 5 Apr. a.m.
437.8 " " " " ( " ) — " 6 " "
437.9 " 4 " a.m. (2 spec.) — died.
437.10 " " " noon (2 lactator) — iss 6 Apr. a.m.
437.11 " " " p.m. (5 spec.) — " " " noon
437.12 " 5 " a.m. (6 " ) — " 7 "
437.13 " " " p.m. (1 " ) —

Wyeomyia

No. 438.

Culex

Córdoba, Ver., Mex. 5 April, 1908.

Stream above suburb of San José' — same locality as *413, 414, & 415, farther down stream. Bromelids low down on grasses. Water apparently fresh from recent rains — at least for the most part. Contained larvae of Wyeomyia (2 sp.) of various sizes, and pupae; many very small larvae of Culex, apparently recently hatched.

Anopheles argyritarsis
Culex pinaroampa D. + K.
" derivator.

No. 439.

Córdoba, Ver., Mex. 5 April 1908

Same locality as #438: streambed - waterhole, isolated, containing clear water — numerous larvae of Culex (2 sp.) of all sizes and a few pupae; also a few larvae of Anopheles. Small Anoph. larvae are black, thorax ivory white with black spots posteriorly, 3d and 8th abdom segts. ivory white.

439.1 pupa 6 April a.m. (6. derivator) — died
439.2 " 9 " noon (" " ) — iss. 13 Apr. a.m.
439.3 " 11 " p.m. (no skin.) —
439.4 " 12 " a.m. (Anopheles) — iss. 14 Apr.
439.5 " 13 " " ( " no skin) —
439.p. iss 28 Apr. (Culex)

28 Apr. This is the only Culex that has pupated for a long time, altho the larvae were furnished with dead leaves and black veg. mould — quite a number of them are still alive. Stegomyia have been ovipositing in the plate in which the larvae are kept.

439.6 pupa 27 Apr. (Scalopus) —

Lutzia
Aedes explocamus
Culex

No. 440.

Córdoba, Ver., Mex. 8 April 1908.

River San Antonio, below ~~market~~ washing-place nearest market. Hard bank of conglomerate; several holes 10 or 15 ft. above river, filled with water by recent rains (3, 4 + 5 Apr.).

Hole with mass of dead leaves, the water blue-black, almost opaque – perhaps colored by indigo dropped by some washerwoman. Water swarming with Aedes larvae, all about same size – 3rd or 4th stage. The larvae have either recently moulted or are moulting. No pupae. There are also numerous very small larvae of Culex – 2d stage.

440.1 pupa 9 Apr. — (7 Aedes, no skins) – 11 Apr. a.m.
440.2 " 10 " a.m. (6 " " " ) – ins. 12 Apr. a.m.

10 Apr. The larvae are all feeding on the surface film from beneath.
A Lutzia larva has appeared which is about the same size as the full-grown Aedes larvae

440.3 pupa 13 Apr. a.m. (2 Lutzia) —
440.4 " " " p.m. (1 " ) —
19 ~~=~~ Apr. Found hole ~~completely~~ nearly dried out, a little water remaining between mass of dead leaves.

440.5 pupa 22 Apr. a.m. (Culex) – ins. 24 Apr. a.m.

No. 441.

Aedes cinereus
Culex

Córdoba, Ver., Mex. 8 April 1908.

Same locality as *440, another hole containing fairly clear water. Comparatively few Aedes larvae, but of larger size than in other hole. Culex larvae, same size as in other hole, numerous.

A shallow puddle between these two holes contained (large) no mosquito larvae

441.1 pupa 9 Apr. — (2 Aedes) — 11 Apr. a.m.
441.2 " " " " p.m. (4 " ) — " " " " & p.m.
441.3 " " " " " (2 " ) — " " p.m.
441.4 " " " " " (18 " ) — " " "
441.5 " 10 " a.m. (8 " ) — " " " & 12 Apr. a.m.

19 ~~20~~ Apr. Visited hole and found water very much reduced, containing larvae and pupae of Culex only.

Anopheles
Lutzia bigotii
Culex coronator D+K.
" pinarocampa D+K.

No. 442.

Peñuela, Ver. Mex. 22 April 1908.

Railroad cut through hill, water-hole by track which must have been filled by recent — two weeks ago and on the 20th. Contained in all stages and a few pupae. Ten Lutzia larvae grown or nearly so, were taken. There are also young Lutzia larvae; these may be recognized nearly horizontal position in the water with doubled under; the stomach-caeca, tube and anal are dark. The Lutzia larvae were placed in bottle but did not attack each other as do Psorophora. One very small Anopheles larva in

| | | | | | | |
|---|---|---|---|---|---|---|
| 442.1 | pupa | 22+23 Apr. | | (13 pupa - 8 skins) | — | iss. 29+25 |
| 442.2 | " | 23 Apr. | a.m. | (5 Lutzia) | — | iss. 25 Apr. a.m. |
| 442.3 | " | " | " | (coronator) | — | " " " " |
| 442.4 | " | " | " | ( " ) | — | " " " " |
| 442.5 | " | " | " | ( " ) | — | " " " " |
| 442.6 | " | " | p.m. | (Lutzia) | — | " 26 " " |
| 442.7 | " | 24 | a.m. | (3 coronator, 1 Culex sp.) | | |
| 442.8 | " | " | noon | (— " + " ") | — | " " " |
| 442.9 | " | 25 | p.m. | (4 Culex) | — | iss. 27 Apr. a.m. 3 died |
| 442.10 | " | 26 | a.m. | (Lutzia) | — | died. |

No. 190. Feb. 2. 1908. "Banana Bromelia" is Heliconia
resembling H. champneiana, Briggs.

" 195. Feb. 7. 1908. "Banana Bromelia" should read Heliconia
resembling H. champneiana.

" 197. Feb. 10. 1908. "Banana-like plants" are even Heliconia
resembling H. champneiana.

" 203. Feb. 12. 1908. "Banana bromelia" is Heliconia
resembling H. champneiana.

226 Caldera Mar. 5, 1908. Plant was terrestrial and
evidently bromeliaceous.

228. Caldera Mar. 5. 1908. "Heliconia" was Calathea
discolor

236. Galon, Mar. 11. 1908. "Banana-like" plant is
Heliconia champneiana (?)

238. Tabernilla Mar. 12. 1908, "Wild plantain" is Heliconia
champneiana (?)

239 Tabernilla, Mar 12. 1908 "Wild plantain" is Heliconia
champneiana (?)

240 Tabernilla, Mar 12, 1908 ~~Wild plantain~~ Plant is
Heliconia champneiana (?)

No. 241. Galūn, Mar. 11, 1908. "Wild Plantain" = Heliconia chamneiana (?)

" 251 Caldera, Mar. 21. 1908 Pine-apple plant = terrestrial bromelia.

" 271 Frijoles, April 19. 1908 "Wild pine" probably equals terrestrial bromelia.

No. 463. Arcon. Dec. 24. 1909 "Pinapple plants" to be determined immediately on return

No. 467 Tabernilla, Feb. 4. 1909. "Wild plantain" is Heliconia, probably <u>lutéofusca</u> or possibly <u>acuminata</u>

No. 469. Tabernilla Feb. 4. 1909. "Pine-apple like plant" probably a terrestrial bromelia.

No. 472 Miraflores Feb. 5. 1909. "Heliconia" is <u>Calathea discolor</u>

No 476 Miraflores, Feb. 8. 1909 "Heliconia" is <u>Calathea discolor</u>

No. 495 Caldera, Feb. 12, 1909. Plant - undoubtedly a bromelia, the central cup holding quite large quantity of water.

No. 512 and 513 Alhajuela Mar. 18, 1909. Plant is
of same kind as No 495.
Although probably different species.

No. 556. Sabanilla, April. 16. 1909. "Heliconias" vivi Calathea

No. 560. Sabanilla, April 22. 1909. Calathea discolor
noted under this number is correctly
identified and in all later numbers Calathea
will be given its proper name ~~—~~ Also Heliconia
species will be properly noted.

No. 562. Bohio, May 10. 1909. "Pink and yellow wild
plantain" is Heliconia of same
species frequently noted as resembling
H. chartacea

568
433
135